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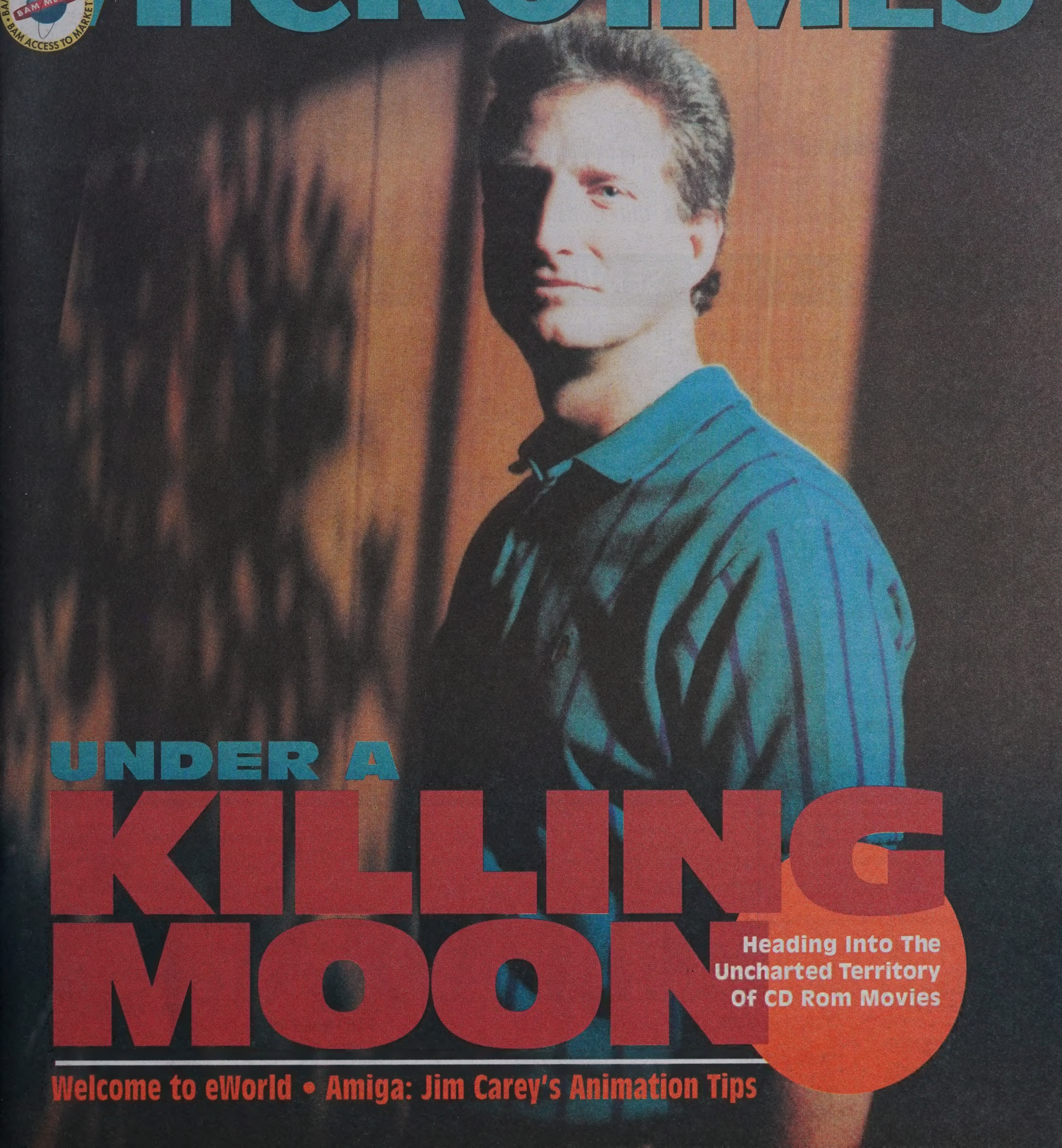

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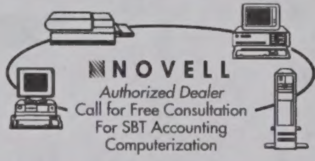

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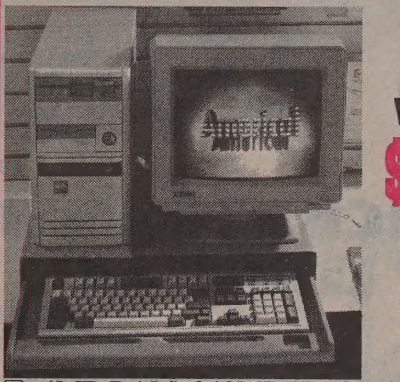

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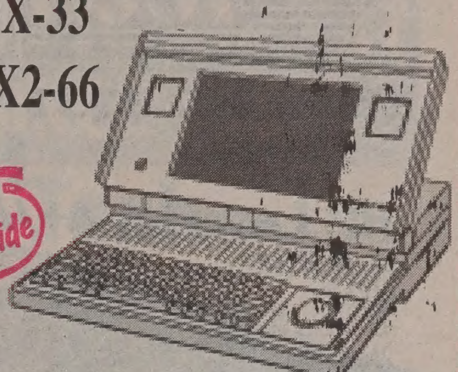

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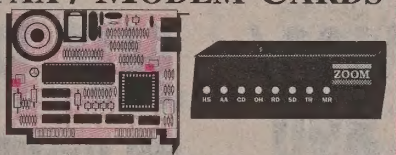

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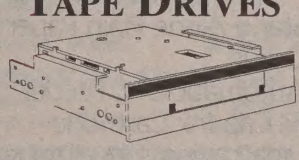

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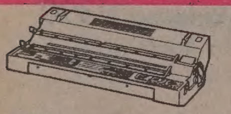

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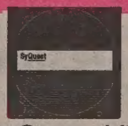

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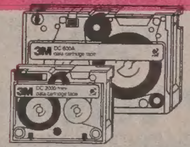

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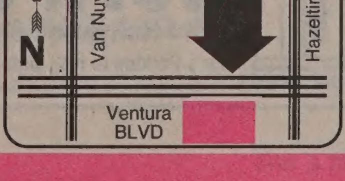

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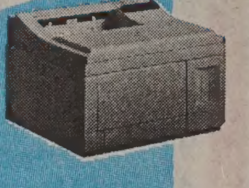

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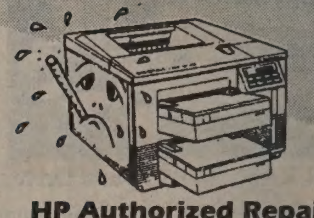

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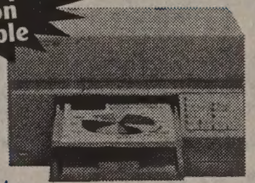

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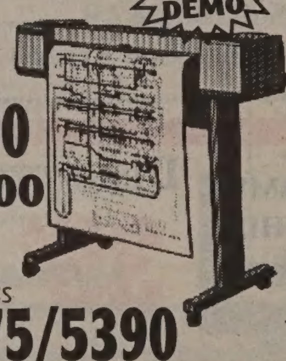

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BY MICHAEL ROBIN • COVER PHOTO: GREG ALLEN

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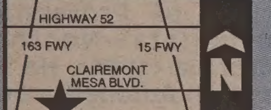

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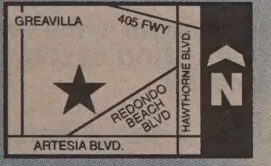

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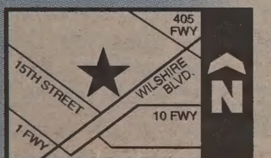

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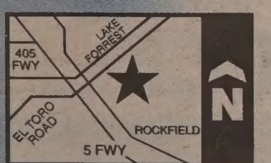

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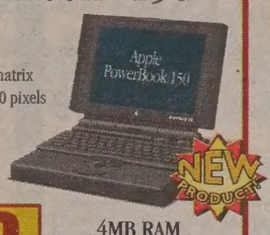

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- 9.5-inch (diagonal) FSTN, passive-matrix display with 16 levels of gray (640 x 400 pixels)
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- In addition to its high-performance Motorola 68LC040 processor, the PowerBook 520c features a high-quality, dual-scan color display that makes this a good choice for people who use their notebook computer to present to clients
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- 9.5-inch (diagonal) dual scan, passive-matrix display with 256 colors (640 x 400 pixels)
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Apple PowerBook® 540

- Apple's top-of-the-line monochrome PowerBook computer that features a high performance 68LC040 processor
- 66/33MHz speed
- Has a built-in 9.5-inch (diagonal) backlit active-matrix display with 64 levels of gray (640 x 480 pixels)–which can be easily upgraded to an active-matrix color display
- Will accommodate a future version of the PowerPC processor
- Features an Apple trackpad for more precise cursor control
- Offers 3 slots for expansion capabilities
- Comes with the PowerBook Mobility Bundle

4MB RAM
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Apple PowerBook® 540c

- Apple's top-of-the-line monochrome PowerBook computer, combining the power of a high performance Motorola 68LC040 processor with a high quality, 9.5-inch (diagonal) backlit active-matrix display with two display modes: 256 colors at 640 x 480 pixel resolution, and Thousands of colors at 640 x 400 pixel resolution
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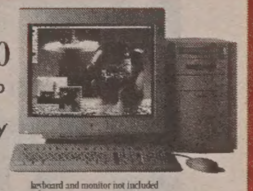
- Sound input port (stereo), output port (stereo)
- Built-in LocalTalk™ and high-speed Ethernet connections: AppleTalk™ networking software.



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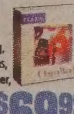

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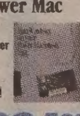

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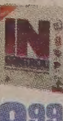

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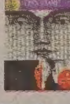

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John Wharton, who wrote the commemoration of Gary Kildall in this issue, is an independent computer design consultant, analyst, and free-lance writer based in Palo Alto, CA. He also lectures in Electrical Engineering at Stanford University and writes occasional columns for *Microprocessor Report* newsletter. John once worked as an applications engineer and processor architect at Intel, and first got to know Gary Kildall while acting as chief technical liaison between Intel and Digital Research.

For the last year John has been attempting to complete an 800-page in-depth analysis of the 386-, 486-, and Pentium-class microprocessors sold by Intel, AMD, Cyrix, and IBM. The report should be published in Q4, John says—though the list of chips to be covered keeps gaining on him.

Jonathan E. has worked with desktop multimedia since 1988. He also writes about world music and the Archaic Revival for *BAM*. His USPS mailing address is c/o SoundSwell, 54 29th St., Richmond, CA 94804. His email address is jeve@well.sf.ca.us .

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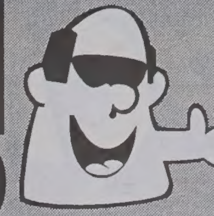

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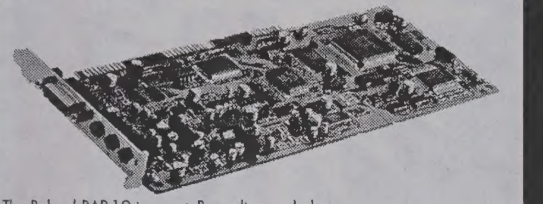

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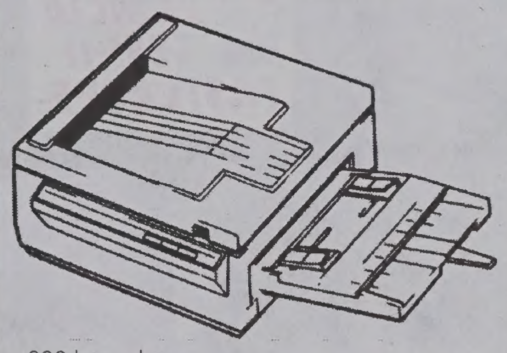

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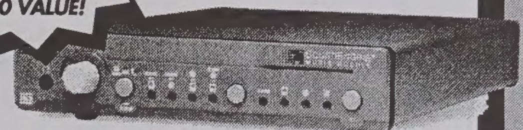

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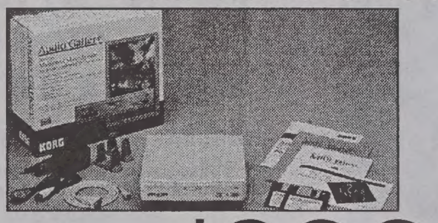

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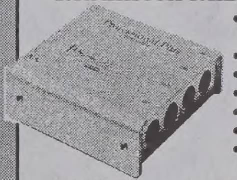

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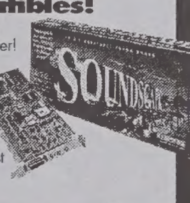

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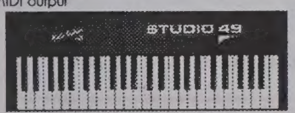

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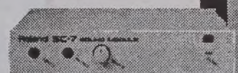

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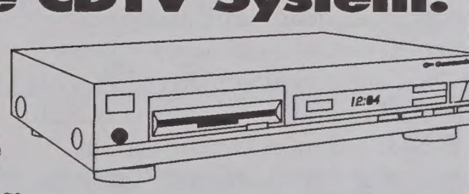

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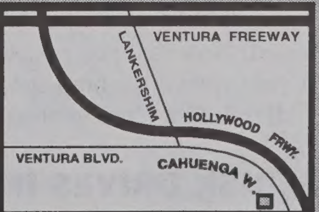

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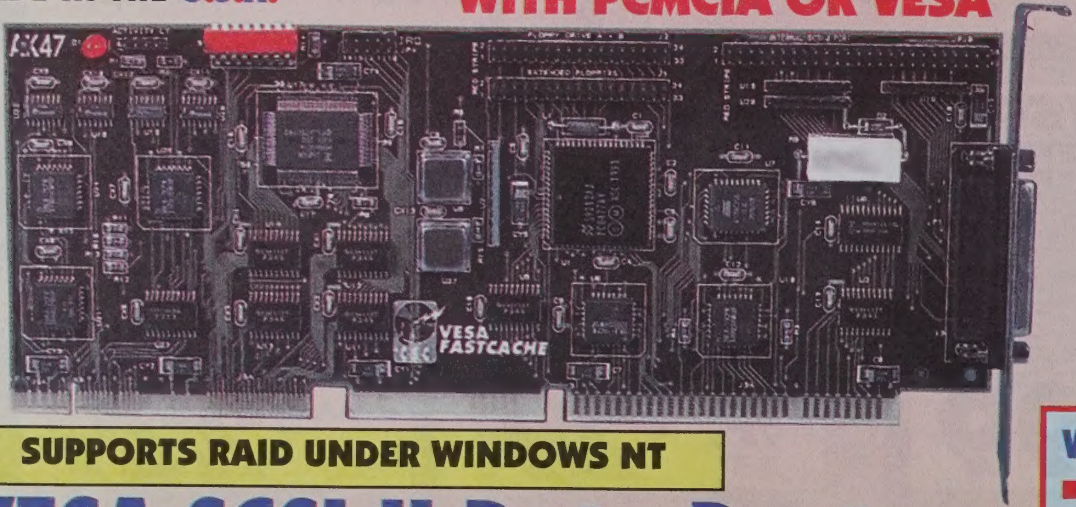

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BY PAUL HOFFMAN

Industry Insight

Microsoft Agrees To Change Tactics To Avoid Prosecution

In a somewhat anticlimactic move to end the investigation by the US Department of Justice, Microsoft has signed a consent decree that limits a few of the methods it uses to control the worldwide market of PC operating systems. According to Microsoft, the agreement will have no discernible impact on its finances, and many of Microsoft's competitors were disappointed that so little was covered by the settlement.

The basic parts of the agreement say that Microsoft will:

- stop licensing MS-DOS and Windows to hardware manufacturers based on the number of systems the manufacturer ships
- shorten the required license for hardware manufacturers to one year
- change the restrictions on companies that have nondisclosure arrangements with Microsoft for future versions of operating systems

The agreement did not cover other issues which Microsoft's competitors had hoped would be investigated, such as unfair competition because Microsoft's applications departments are given advance information about future operating systems versions. However, the agreement does not prevent the Department of Justice from coming after Microsoft in the future for other anticompetitive practices.

In an interesting twist, the agreement was between three parties instead of the normal two. The third group was the European Commission, which had also been investigating Microsoft's practices. The EC became involved when Novell complained to them about Microsoft's tactics over a year ago. The agreement is immediately binding in the EC, while it still must be approved by a US federal judge before it takes effect here.

It has taken many years to get to the agreement, and the chief of the Department of Justice's antitrust division, Anne Bingaman, agrees that the settlement comes years later than it should. The main problem was that the case originally started in the Federal Trade Commission, which sat on the investigation for many years without proceeding.

Now, the decree will have almost no visible effect on PC users. Because Microsoft was able to get its operating system on essentially every PC made, almost no one even considers other operating systems. If the agreement had come five years ago, DR DOS (now NovellDOS) and OS/2 might have had a fighting chance in the consumer's mind. However, it is unlikely that more than 10% or 20% of the market will even consider those alternatives to MS-DOS or the upcoming Windows 4.

> **If the agreement had come five years ago, DR DOS (now NovellDOS) and OS/2 might have had a fighting chance in the consumer's mind.**

The basic issue tackled in the consent decree is Microsoft's requirement that a hardware manufacturer pay a royalty on every PC it makes, regardless of whether it is sold with Microsoft's operating system, in order to get a sharp discount on MS-DOS and Windows. Unless the manufacturer was willing to pay a higher royalty rate per copy of MS-DOS sold, this essentially forced them to put MS-DOS on every machine they sold, since they'd already paid for it. Microsoft's stated reason for this requirement was that many manufacturers were cheating, and it was much easier to audit the entire PC run instead of just those systems that the manufacturer said had MS-DOS installed.

Under the agreement, Microsoft will no longer offer these discounts. This could possibly raise the price of PCs for some manufacturers, but it is unlikely to do so because Microsoft will probably give the same total pricing to all the major manufacturers. The agreement also prevents Microsoft from making multiyear pricing agreements, giving hardware manufacturers more incentive to look at MS-DOS competitors. However, since so few users would even consider a non-Microsoft operating system at this point, the agreement will probably have little effect on Novell or IBM's abilities to sell copies of NovellDOS or OS/2.

The nondisclosure agreement portion of the consent decree came out of Microsoft's attempts to limit the ability of software manufacturers to work on Windows 4 and Windows NT at the same time they worked on other competing operating systems. Microsoft's reasoning for this restriction was that these developers might leak information to its competitors; this argument is fairly ridiculous, given how quickly details about Microsoft's prerelease versions are covered by the press. The consent decree says that Microsoft won't put such onerous restrictions in its nondisclosure agreements in the future.

The Department of Justice left open the possibility that it will go after Microsoft on other antitrust grounds, but it seems unlikely that this will happen in the short run. For Microsoft's competitors in the software market, this was particularly disappointing. Many companies claim that Microsoft's applications developers have an unfair advantage over other companies because they know about new features and changes in operating systems before outside companies

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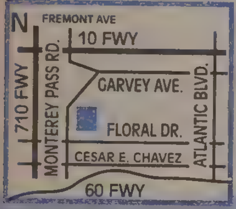

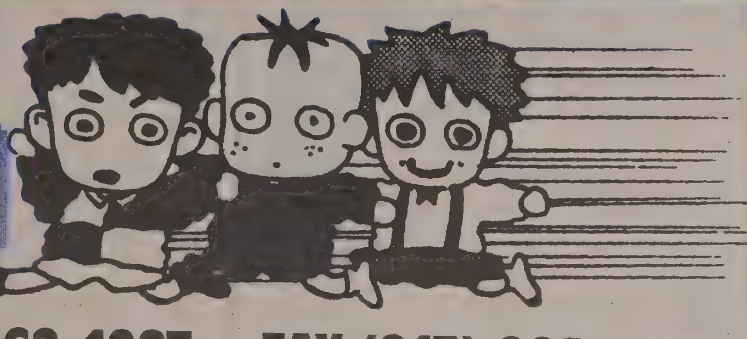

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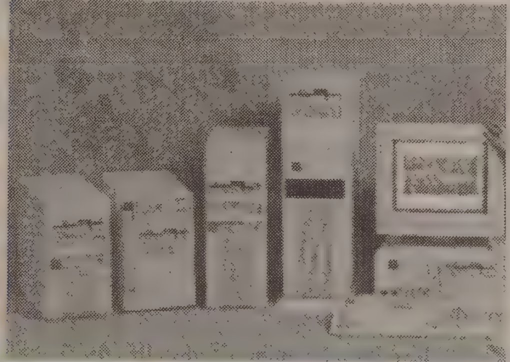

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Industry Insights *continued...*

do. No one has proven that this gives Microsoft's applications any advantage in the market, and many of the major players in the software market have been able to keep up with Microsoft on features in their software.

This may change later this year when the first round of Windows programs that use OLE v2 appear. OLE, Microsoft's technology for Object Linking and Embedding, allows a program to create documents that include parts of documents created by other programs; for example, it makes it easy to create a word processing document that includes part of a spreadsheet. OLE v2 makes it easier for software manufacturers to include parts of documents created by software that they didn't write by making a supposedly standard set of routines.

As many developers have recently discovered, OLE 2 is anything but perfect. In a move decried by many companies, Microsoft has refused to help them ensure that their programs that use OLE 2 will work with other programs that use OLE 2. According to Microsoft's developer relations department, Microsoft will not help outside application vendors test compatibility.

If you buy two programs from different manufacturers, you cannot be sure that you will be able to transfer data between them. For example, one program may support only a few of the OLE 2 features, and the other supports different ones. Of course, you can expect all the programs from one company to transfer data correctly, and guess which company knows all about the internals of OLE 2, probably has first crack at the OLE 2 development tools, and has programs in every major application category: Microsoft.

This kind of action on Microsoft's part might still spark another investigation by the Department of Justice or its lethargic partner the Federal Trade Commission. Given that Microsoft was concerned enough about the EC's investigation to include them in the agreement process, the EC's investigatory agencies could also move ahead on fronts not covered by the consent decree. If there is enough outcry from European companies about Microsoft's tactics in other areas, they may still face court cases that could force them to change the way they do business.

A point often overlooked in the many years that the computer press covered this story is that it is not clear that the PC user community was hurt by the pricing practices that Microsoft has now sworn off of. Having a choice of brands of gasoline is probably a good way to keep prices down; forcing Ford to offer engines from different manufacturers in new cars might not be such a hot idea. Imagine if Microsoft was forced to change its practices five years ago, and DR DOS and OS/2 became viable alternatives to MS-DOS.

Would the popular applications like WordPerfect have appeared on each platform? Would the operating system addons like disk compression have appeared if they had to run on each platform? Look how long it took WordPerfect or Lotus to get a good program running on Windows—what would have happened if there were three competing operating systems running on PCs?

The fragmentation of the market might have been good in forcing each operating system company to keep up technically with the others. However, it could also have made it hard on users who wanted to use two applications that didn't run on the same operating system, similar to the problems still faced today by users of Macintosh and Windows programs.

Continued on page 18

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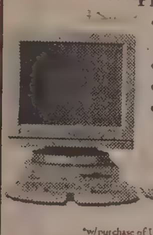
Apple® Macintosh Quadra® 605
W/Application Software

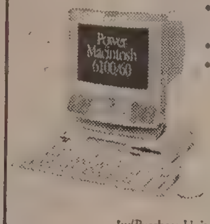


- 25MHz 68LC040 Processor
- Expandable to 36MB of RAM
- 512K of on-board VRAM
- Includes 7 Softwares Pre-Loaded

4/160
$829*

*w/purchase of Unitek Ext. K.B. $149, and any Monitor

Apple ® Power Macintosh™ 6100/60

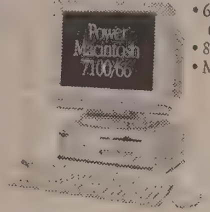


- 60MHz Power PC 601 Processor
- 8MB RAM, Exp. to 72MB
- Monitor/K.B. not included

8/160
$1519*

*w/Purchase Unitek Ext. KB $149, and Any Monitor

Apple® Power Macintosh™ 7100/66



- 66MHz Power PC 601 Processor
- 8MB RAM, 32K Cache
- Monitor/K.B not included

8/250
$2569*

*w/Purchase of any Monitor

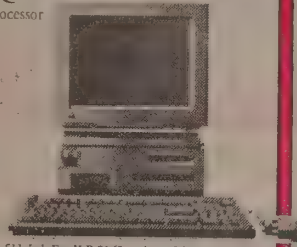
Apple® Power Macintosh™ 8100/80

- 80MHz Power PC 601 Processor
- 2MB of VRAM
- Monitor & K.B. not included

8/250
$3626*

*w/Purchase of Unitek Ext. KB $149, and any Monitor

Apple Macintosh Quadra® 650



- 33MHz 68040 Processor w/built-in Math Co-processor
- Keyboard and Monitor not included

8/230
$1809*

*w/Purchase of Unitek Ext.K.B.$149 and any Monitor

Apple Macintosh Quadra® 660AV

- 25MHz G68040 25/55MHz DSP
- 8MB RAM, Expandable to 68MB Monitor & K.B. not included

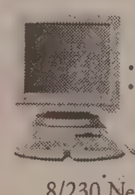
SPECIAL BUY

8/230
$1379*

8/230/CD
$1629*

* w/Purchase of any Monitor

Apple Macintosh Quadra® 800

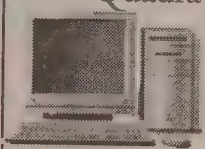


Motorola 68040, 33MHZ
- 33MHz Floating Point Unit
- Paged Mem Mgmt, 8K Cache
- K.B & Monitor Not Included

8/230 New
$2219

8/500 New
$2359

Apple Macintosh Quadra® 840AV



- Most powerful, feature-rich system Apple has ever built.
- Innovative architecture that delivers new capabilities in telecommunications, video and speech
- 40MHz 68040 processor
- 66MHz digital signal processor

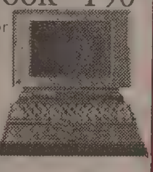
Keyboard and Monitor not included.

8/230
$2285*

* w/Purchase of Unitek Ext. K.B. $149

NEW

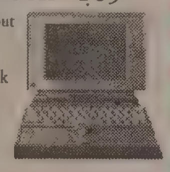
Apple Macintosh PowerBook® 150



- 68030 Microprocessor
- 33MHz
- 9.5" Backlit, Passive Matrix, Gray-Scale

$1379

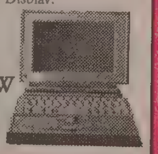
Apple Macintosh PowerBook® 165



- Color Video Output
- 33MHz 68030 Microprocessor
- Original Hard Disk

4/80
$1359

Apple Macintosh PowerBook® 180



- Gray Scale Active Matrix Display!
- Color Video Output!
- High Performance & incredible speed

Special Buy - NEW
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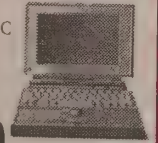
$1949

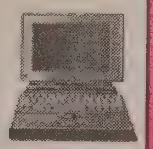
Apple Macintosh PowerBook® 520/520C



- Motorola 68LC040 50/25MHz
- Upgradeable to Power PC Built-In Ethernet

520	520C
4/160	4/160
$2059	**$2629**

Apple Macintosh PowerBook® 540/540C

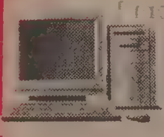


- Motorola 68LC040 66/33 MHz
- Upgradeable to PowerPC
- Expandable to 36MB

540	540C
4/240	4/320
$2839	**$BEST PRICE**

SPECIAL BUY

Apple® Macintosh® Quadra® 950

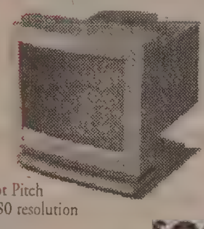


- 33MHz, 68040 Microprocessor
- Ten Built-In Ports
- Five Nubus Expansion
- K.B. & Monitor not included Special Price

16/1000 HDD
$3765

NEW

Apple Macintosh® Color Plus 14" Display

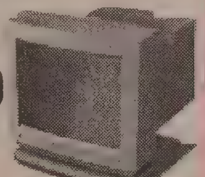


- .28 Dot Pitch
- 640x480 resolution

$299

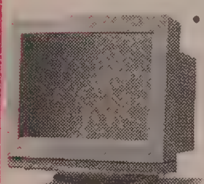
Apple Macintosh® Color Display

- 14" Hi-Res Monitor
- Trinitron® Color Display
- .26 Dot Pitch



$379

Apple® Multiple Scan™ 17" Display



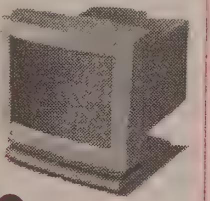
- Trinitron Screen
- Digital Control
- 17" Screen

$949

NEW

Apple® Multiple Scan™ 20" Display

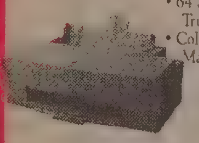
- Trinitron Screen
- Digital Control
- 20" Screen



$1949

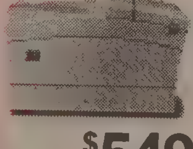
Apple® Color Stylewriter® Pro

- 360DPI Resolution
- 64 Scalable Truetype Fonts
- Color Sync color Matching Tech



$579

Apple® Laserwriter Select™ 300

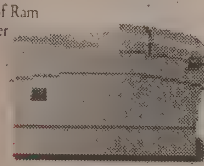


- 300DPI
- 5PPM
- 512K

$549
Limited Time & Quantity

Apple LaserWriter Personal™ 320

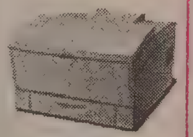
- 300DPI
- 4 Pages Per minute
- 2MB of Ram
- w/Toner



$859

New Apple LaserWriter Select™ 360

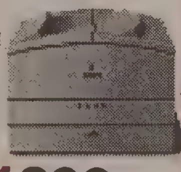
- 600 Dot per inch
- 10 Pages Per minute
- 7MB Ram
- Adobe Postscript 2
- w/Toner



$1399

Apple LaserWriter® Pro 630

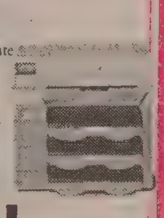
- 600 DPI
- 8 Pages per minute
- 8MB Ram
- Adobe Postscript II
- w/Toner



$1899

Apple LaserWriter® Pro 810

- 300, 400 (default) 600 or 800 DPI
- 20 Pages Per Minute
- 8MB Ram
- 64 Scalable Fonts



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TELEPORT Mercury	$339

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Color Page

- 17" Monitor
- .26 Dot Pitch
- 1024x768

$559

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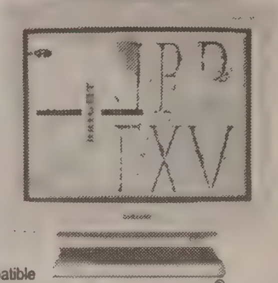
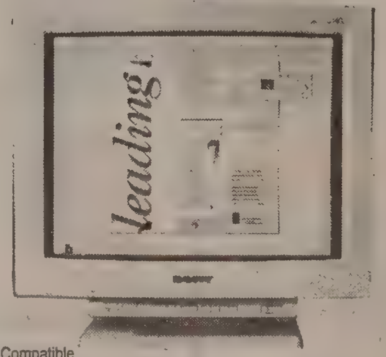
GDM-17se



- Mac Compatible
- 17" Super Fine PitchTMMultiscan® Trinitron® color graphic display
- Unique ASIC design automatically adjusts image geometry parameters across a continuous range of scan frequencies
- Energy Star and VESA-DPMS compliant
- .25 mm Aperture Grille pitch
- Maximum resolution of 1280 x 1024 at 77 Hz refresh
- Horizontal scan range of 31.5 to 82 kHz
- Easy-to-use digital control of screen images
- Includes color temperature control for publishing, photography, imaging, and design applications
- Swedish MPR II compliant

$959

GDM-2036S

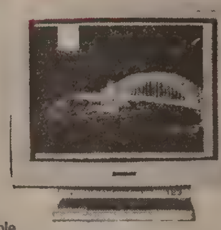


- Mac Compatible
- 20" Super Fine PitchTM Multiscan® Trinitron® color graphics display monitor
- .30mm Aperture Grille pitch
- Maximum resolution of 1280 x 1024 refresh (non-interlaced)
- Variable scan frequency of 30 to 71 kHz
- MRP II

• Refurb. •

$1599

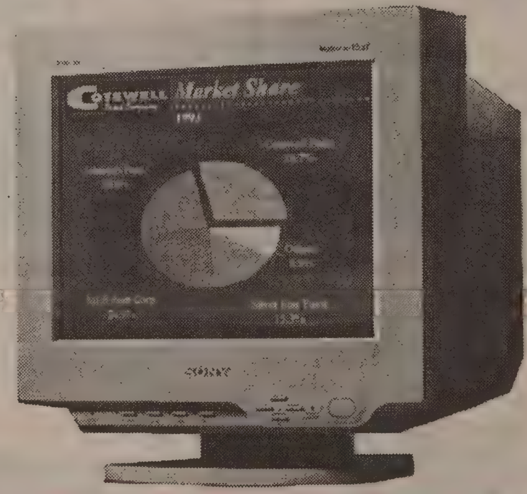
NEW! GDM 20se



- Mac Compatible
- 20" Super Fine PitchTM Multiscan® Trinitron® color graphics display monitor
- .30 mm Aperture Grille pitch
- Maximum resolution of 1600 x 1200 at 80 Hz refresh (non-interlaced)
- Variable scan frequency of 28 to 85 kHz
- Overscanning for crisp edge-to-edge images
- Energy Star Compliance Ecologic
- Includes color temperature control for publishing, photo and design applications
- Full compliance with Swedish MPR II standards for VLF/ELF magnetic and electrical emissions

$1849

NEW! Multiscan® 15sf 15" Trinitron®

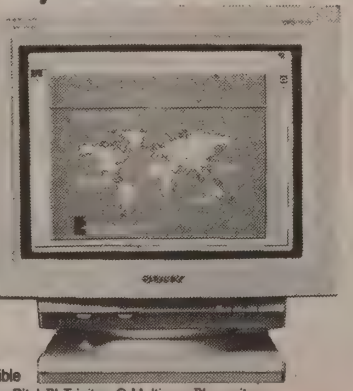


- 15" Digital Multiscan® computer display with 14.0 maximum diagonal viewable area
- Trinitron® technology delivers bright images and vibrant colors
- .25mm Aperture Grille pitch
- EPA Energy Star and MPR II compliant
- Supports PC and Macintosh resolutions from VGA to 1280 x 1024 at 60Hz
- New design feature simple control buttons and minimizes footprint
- Includes color temperature control

#SON-15SF

$469

Sony CPD-1320

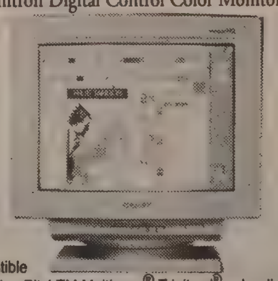


- MAC Compatible
- 14" Super Fine Pitch™ Trinitron® Multiscan™ monitor
- .25mm Aperture Grille pitch
- Resolution of 640 x 480 (VGA)
- Scan frequency of 31.5 kHz
- Includes VGA cable and tilt/swivel stand

$359

Sony CPD-1730

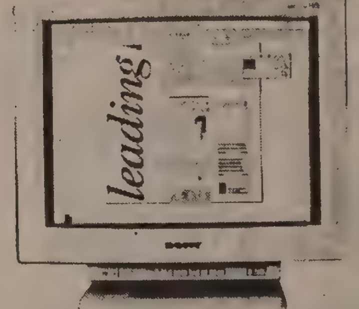
Trinitron Digital Control Color Monitor



- Mac Compatible
- 17" Super Fine PitchTM Multiscan® Trinitron® color display
- .25mm Aperture Grille pitch
- Maximum resolution of 1024 x 768 at 72 Hz refresh (non-interlaced)
- Variable scan frequency of 28 to 58kHz
- Overscanning for crisp edge-to-edge images
- Sony Display Memory System provides easy-to-use digital control of screen images
- Full compliance with Swedish MPR II standards for VLF/ELF magnetic and electrical emissions

$929

GDM - 1936



- Mac Compatible
- 20" Super fine Pitch TM Multiscan® Trinitron® color graphics display monitor
- 30 mm Aperture Greille pitch
- Maximum resolution 1280x1024 refresh (non-interlaced)
- Variable scan frequency of 30 to 71kHz

• Refurb. •

$1339

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- VERSA 750EC 340HDD 4888
  486DX75 4MB RAM Active Color Matrix
- VERSA 50EC 209/340 .... 4095/4499
  486DX2-50, 4MB, Color Active

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Silentwriter 1097 10PPM	1349

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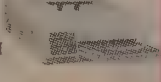
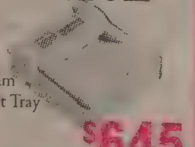

- 4PPM
- 300DPI
- 512K RAM
- 100 Sheet Tray

$489

OL 410E

- 4PPm
- 600DPI
- 2MB Ram
- 100Sheet Tray

$645

OL810

- 8PPM
- 300DPI
- 1MB Ram
- 200 Sheet Tray
- Scalable Fonts

$865

ML320/321

- 300 CPS
- Dot Matrix
- 9 Pin

$319/429

ML590/591

- 360CPS
- Dot Matrix
- 24 Pin
- Color Option

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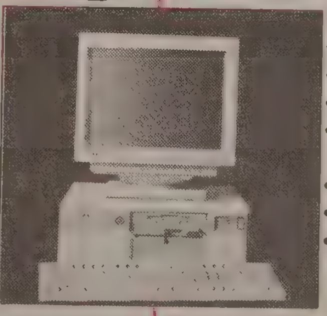

UNITEK 486DXII-66
- 486DXII-66 Processor
- 4MB Ram
- 420MB HDD
- 1.44 Drive
- SVGA Local Bus Card 1MB
- 14" SVGA Monitor .28
- Keyboard, MS Mouse
- MS Windows, MS DOS

$1480

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Industry Insights

continued from page 14

Cyrix Gets Official Nod From AST; 486 Market To Open Up

A few months ago, Intel's lead competitor AMD made a deal with Compaq to include AMD's CPUs in a few of its line of computers. Now another Intel competitor, Cyrix, has a deal to supply CPUs to AST Research, another major manufacturer of PCs. The two agreements with major computer vendors, and the many that are expected to be announced in the coming months, show that the 486 market is about to get much more competitive than Intel would like.

Intel has responded to Cyrix and AMD by deemphasizing the 486 market in favor of the Pentium market that it owns completely.

Although the AST-Cyrix announcement didn't say how many systems AST would include the CPUs in, it was an indication that major system vendors are uncomfortable relying on Intel for all their CPUs. This is due to many factors, including Intel's spotty record in shipping chips that it no longer considers important and Intel's inconsistent pricing policies. Cyrix and AMD will be able to pick up more bits of the CPU market as more large manufacturers turn to them on an experimental basis.

Intel has responded to Cyrix and AMD by deemphasizing the 486 market in favor of the Pentium market that it owns completely. It has also lowered its prices on 486 CPUs in an effort to squeeze Cyrix's and AMD's profits, and at the same time show that Intel doesn't think much of the value of the 486. If Intel acts as it has in the past, it will start phasing out many 486 models as the price of the Pentium drops to similar levels as 486 CPUs.

However, that strategy may not be to Intel's advantage in the long run, since the demand for high-end computers may not be as strong as it has in the past. A good indicator of this is the early reports from Windows 4 beta testers who say that it runs about as fast, if not faster, than Windows 3.1 on 486 and 486SX systems. Although it is likely that many multimedia applications will require a Pentium processor in the future, most multimedia titles that don't include full-screen video now run just fine on 486 systems.

Cyrix and AMD will probably be strongest in the notebook market, where few people even think of running multimedia and all that's really required is the ability to run Windows-based communications programs, word processors, and spreadsheets. Even slow 486SX chips seem to do just fine at these tasks under Windows 3.1, and if Microsoft is successful at making Windows 4 run on par with Windows 3.1, it is likely that the 486SX and 486 markets will survive well for at least another three years. ■

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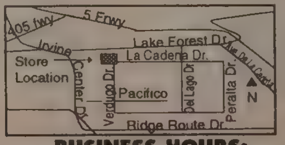

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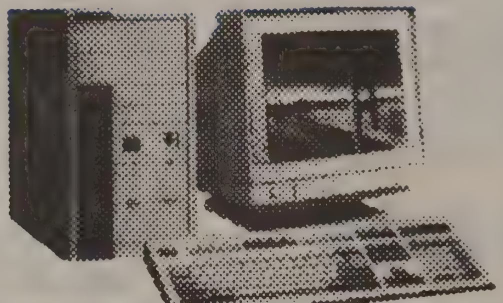

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	SOFTWARE										
OTC	Adobe	ADBE	25.50	31.19	5.69	22.30	25	0.20	0.64	34.50	16.25
OTC	Aldus	ALDC	25.06	30.38	5.31	21.20	37	0.00	0.00	34.50	15.00
OTC	Autodesk	ACAD	48.63	52.00	3.38	6.94	21	0.48	0.92	61.75	37.00
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OTC	Informix	IFMX	14.50	20.13	5.63	38.79	23	0.00	0.00	24.50	14.25
OTC	Lotus	LOTS	34.25	31.25	-3.00	-8.76	18	0.00	0.00	86.50	30.25
OTC	Microsoft	MSFT	49.50	50.56	1.06	2.15	27	0.00	0.00	54.63	35.19
OTC	Novell (L)	NOVL	14.50	16.13	1.63	11.21	-	0.00	0.00	26.63	14.00
OTC	Oracle (H)	ORCL	36.63	36.75	0.13	0.34	38	0.00	0.00	40.13	22.88
OTC	Software Publishing (L)	SPCO	4.13	3.88	-0.25	-6.06	-	0.00	0.00	8.63	3.00
OTC	Symantec	SYMC	10.50	12.25	1.75	16.67	53	0.00	0.00	20.50	9.88
	HARDWARE										
OTC	Apple	AAPL	25.61	31.00	5.39	21.05	-	0.48	1.55	45.25	22.00
OTC	AST Research	ASTA	12.88	14.50	1.63	12.62	-	0.00	0.00	33.00	12.50
NYS	Compaq (s)	CPQ	31.00	30.75	-0.25	-0.81	14	0.00	0.00	39.88	15.28
NYS	Digital Equipment	DEC	19.88	19.38	-0.50	-2.52	-	0.00	0.00	43.13	18.25
OTC	Dell	DELL	24.13	26.00	1.88	7.77	-	0.00	0.00	30.75	15.13
NYS	Hewlett-Packard	HWP	76.00	75.25	-0.75	-0.99	14	1.20	1.59	93.63	64.38
NYS	IBM	IBM	59.88	61.38	1.50	2.51	27	1.00	1.63	65.00	40.63
NYS	Silicon Graphics	SGI	21.75	21.50	-0.25	-1.15	23	0.00	0.00	26.88	16.00
OTC	Sun Microsystems (L)	SUNW	18.38	22.13	3.75	20.41	11	0.00	0.00	31.38	18.25
NYS	Xerox	XRX	97.75	101.00	3.25	3.32	-	3.00	2.97	104.88	69.88
NYS	Tandy	TAN	33.75	36.50	2.75	8.15	15	0.60	1.64	50.75	28.13
	CPU'S										
NYS	Advanced Micro Devices	AMD	24.38	25.88	1.50	6.15	9	0.00	0.00	32.75	16.75
OTC	Intel	INTC	58.38	57.88	-0.50	-0.86	10	0.24	0.41	74.50	51.50
NYS	LSI Logic (H)	LSI	23.13	27.00	3.88	16.76	19	0.00	0.00	29.50	13.00
NYS	Motorola	MOT	44.88	49.50	4.63	10.31	23	0.28	0.57	54.88	42.13
	COMMUNICATIONS										
NYS	AT&T	T	53.75	54.25	0.50	0.93	17	1.32	2.43	64.88	49.50
NYS	BellSouth Corp.	BLS	60.13	60.38	0.25	0.42	23	2.76	4.57	63.88	53.00
OTC	MCI	MCIC	22.31	23.81	1.50	6.72	20	0.05	0.21	29.63	21.38
NYS	Northern Telecom	NT	28.00	30.75	2.75	9.82	-	0.36	1.17	33.75	21.38
NYS	Pacific Telesis	PAC	30.63	31.25	0.63	2.04	28	2.18	6.98	34.50	27.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

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ADVANCES....................	24
DECLINES.....................	7
UNCHANGED................	0
NEW HIGHS...................	2
NEW LOWS....................	3

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MICROTIMES STOCK INDEX	4238.94	4577.29	338.35	7.98
DOW JONES INDUSTRIAL AVERAGE	3636.94	3735.04	98.10	2.70
STANDARD & POOR'S 500 INDEX	442.80	453.11	10.31	2.33
N.Y.S.E. COMPOSITE	244.55	250.24	5.69	2.33
NASDAQ COMPOSITE	693.79	716.68	22.89	3.30

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DATE	MICRO TIMES	DOW JONES
01/07/94	4866.50	3820.77
02/04/94	4728.74	3871.42
03/04/94	5081.75	3832.30
04/05/94	4878.26	3675.41
04/29/94	4639.86	3668.31
05/27/94	4709.29	3757.14
06/24/94	4238.94	3636.94
07/22/94	4577.29	3735.04

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One month after being beaten black and blue by Wall Street, investors embraced high-tech stocks during the monthly trading session ended July 22.

The MicroTimes Stock Index, which plunged 9.99% in June when investors feared a seasonal summer slowdown would take its toll on computer companies' profits in the next two quarters, was the beneficiary of Wall Street's mercurial ways. The box score for our index of thirty-one companies tracked in the accompanying table: up a resounding 338.35 points, or 7.98%, en route to a close of 4577.29. The Dow Jones Industrial Average, not surprisingly, paled in comparison to the MicroTimes Stock Index, as that indicator of thirty blue-chip stocks added 2.7% to its market value en route to a close of 3735.04.

Turning to stocks in the MicroTimes Stock Index last month:

➻ Adobe closed the month as the largest dollar-gainer of the lot, as it rallied $5.69 a share to $31.19. Last month, the company reduced the price it will pay to acquire Aldus by 13%, or roughly $70 million, after agreeing to settle a lawsuit with Altsys, and because of falling valuations on technology companies since last March. Aldus shareholders were pleased with the news as well, as their stock price swelled $5.31, or 21.2%, before coming to rest at $30.38.

➻ Informix led the portfolio on a percentage-gained basis, rising a sturdy 38.8% to $20.13. The Menlo Park-based company pleased Wall Street when it recorded a 10% gain in second-quarter profit to $13.3 million. Following the bullish earnings report card, Bear Stearns raised its rating on Informix to "strong buy" from "buy."

➻ Apple rebounded strongly last month, rising $5.39, or 21.1%, to finish at $31. The company surprised the investment community when its fiscal third-quarter earnings leaped to 50 cents a share from 9 cents in the year-ago period, on a 15% gain in revenues. Higher gross margins and lower expenses combined to push Apple's bottom line sharply higher than what Wall Street was expecting.

➻ IBM surprised Wall Street and shareholders last month when it posted stronger-than-expected second-quarter earnings that read as follows: net income swelled to $689 million vs. last year's loss of $8 billion. Sales for the same period rose a more modest 2.7% to $15.4 billion from an adjusted $15 billion. Wall Street's reaction to the news was direct and swift: IBM's share price jumped $1.50 a share to $61.38. ■

REALIZABLE FANTASIES • BY JIM WARREN

Reality Check!

This concerns a trivially realizable fantasy for opening government, plus the other side of a lune-tunes fantasy, badly in need of balance.

Citizens' Fax-Modems

Changes and amendments to legislation often occur much too fast for concerned citizens to receive *useful* updates by first class US Mail, much less permit *effective* snail-mailed responses from the public. Online access to legislation, *sans* legislative fees, is helping to remedy the timely-update problem. But effective citizen response remains difficult.

If you can find out about current legislation in time, you can telephone your comments. But calls are received by staff and recorded by them in brief notes—or, often, merely as check-marks. The substance of your points is often lost—especially by everyone except perhaps the staffer with whom you speak.

Telegrams are better than phone calls—but only if you can afford them.

For a number of reasons, individualized 1- and 2-page letters are—*by far!*—your most effective communication to elected officials (if you can't send money or bird-dog 'em, face-to-face). Your comments are recorded in their complete, original form. They can be easily copied to others. Supportive legislators can wave them in hearings—very important.

But often letters carried by the postal-escargot arrive either too early before a hearing and are forgotten, or too late—after a vote—and are ignored.

However, I don't know of a single legislator—state or federal—who doesn't have a tax-purchased fax machine in their office connected to a tax-funded phone line. And more and more citizens have fax-modems, or at least access to free or fee fax machines.

By fax, citizens can send their comments in their most useful, written form—and have them arrive not too early and not too late. *If* they can get their elected representative's fax number.

To my amazement—and the outrage of almost every citizen group to whom I have mentioned it—a number of legislators still refuse to publicly disclose their fax numbers (we suspect contributors and favored lobbyists may get better treatment than the "mere" voters)!

It's time for elected officials to disclose their tax-supported fax numbers every time they disclose phone numbers—or their names.

Also, local, state, and federal elected officials and/or their staffs are starting to come online—but many are *very* coy about their tax-funded email addresses.

Elected officials who desire the advantages of tax-funded email should arrange for and publish a public email address for their office—with input to it handled at least as efficiently as incoming telegrams. (There is a difficult policy question: Should email receive more responsive treatment than snail-mail? It's customary in the medium, but it is hardly equal treatment for citizens.)

SPA estimates of revenue lost to software piracy are about as accurate as the number of sexual conquests stated by teenage boys.

To do any less than disclose these modern communications alternatives illustrates an arrogant and/or obsolete "representative" who needs to be replaced.

Pirate Fantasies

Beware! Flame alert!

The pack journalists of the advertising-supported establishment press continue to repeat—as though it was fact—the surely fictitious, unverified, and unverifiable Software Publishers Association self-serving mantra, alleging that the commercial software industry is losing "billions and billions" of dollars due to heinous software pirates.

Even the normally reliable *Wall Street Journal* is suckered into publishing such unlikely and unprovable fiction.

The implication seems to be that, if software piracy isn't stopped—by draconian measures including disregard of the 4th Amendment, "reasonable cause," and "presumption of innocence"—then all programmers will become fry-cooks; innovators will turn to gardening; our nation will become a wasteland; the Communist hordes will overrun the world (whoopps!—sorry, wrong specter); and Bill Gates will become homeless. All that and worse.

Estimates of revenue lost to software piracy are about as accurate as the number of sexual conquests stated by teenage boys, or their estimates of the number of their peers who have guns in school—other fantasies similarly reported as though they were fact.

And of course, technologically illiterate, well-lobbied legislators stampede blindly forward, eager to become stalwart protectors of corporate profits—and their tantalizing PAC treasuries—at least in this toll-

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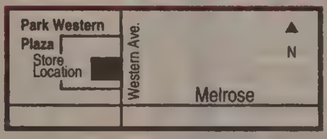

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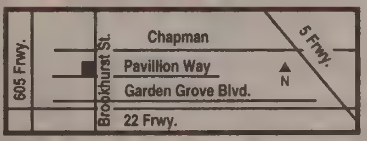

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Fantasies *continued*

free instance that won't degrade tax revenue nor offend organized labor. ("PAC"—political action committee, the self-serving structures created by and for the financial benefit of incumbents and groups-with-loot; the group-purchase clubs where special-interest payoffs have replaced public-interest legislation.)

But nary a note is written about how most folks wouldn't buy most of the software they pirate—just as vile video pirates wouldn't pay $30 a pop (or much more!) for *legal* copies of million-dollar Hollywood blockbusters, and the satellite pirates of the '80s have *not,* in fact, subscribed to most of the five hundred channels that they were perusing before scrambling became good enough to defeat them. However, can you name a single movie producer or broadcaster that has gone broke *because* of video pirates? Nahhh, they just haven't optimized their greed.

Nor do I know of a single software publisher that has been bankrupted by piracy. A much *greater* threat has been from litigious attacks against small, ill-funded publishers by their very wealthy competitors—but Congress has shown little interest in leveling *that* playing field. (There *was* the case, a few years ago, of the US Secretary of State providing pirate copies of hyper-priced, citizen- and case-tracking proprietary software to the Israeli government. But piracy by government is a different matter—ask any taxpayer.)

And the inflammatory articles and testimony about the horrors of piracy never mention that few computer owners and almost no computer professionals, nor schools, nor colleges, nor universities could survive systematic searches of their computers, much less the forfeiture (for use by the raiding agencies) of all systems containing any contraband software—searches and seizures like those that were very selectively conducted by the Secret Service in 1990, and continue to *selectively* occur at the local, state, and federal level.

And no word is even *whispered* of the harm that *effective* prohibitions against pirated programs and "stolen" source code would inflict on continuing innovation and rapid development in the software industry—results that benefit everyone. *All* software is built on the software that came before it—and only the wealthiest innovators can afford to buy all of it.

Flame: Off!

Now, *don't* take this as my condoning unconstrained software piracy. Hell, I sit on the board (so far) of the fifth-largest microcomputer software publisher in the world, and we *vigorously* pursue software pirates.

It's just that—given the deluge of wildly one-sided media reports, and lunatic pronouncements of billions in lost revenues—I thought it was time to offer one tiny presentation of the rest of the story. ■

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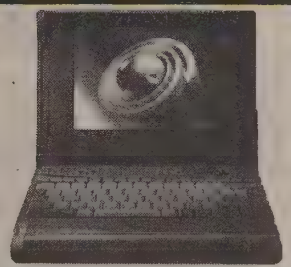

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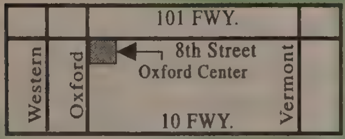

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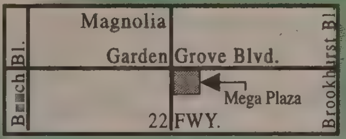

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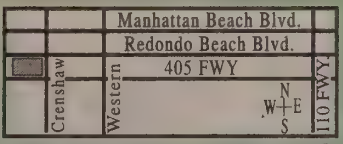

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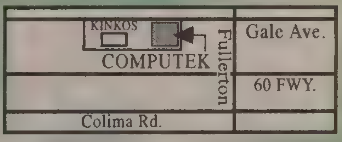

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BY JOHN WHARTON

The Legacy Of Gary Kildall

Gary Kildall, who died on July 11 in Monterey at the age of fifty-two, was often called a microcomputer-industry visionary.

I think that sells him short. A visionary generally speculates idly about the possible long-term ramifications of a technology, without doing anything to make the future happen. Gary was more of a pioneer, blazing a trail through the high-tech wilderness, marking the way for settlers of the new frontier. He was there every step of the way, conceiving the products, designing the algorithms, and debugging the code that would let the microcomputer industry reach its full potential.

And yet, outside of a small circle of friends, few people seem to know of or appreciate the scope of Gary's work.

I first met Gary in 1980 at a microcomputer workshop near Monterey. I last saw him at the same workshop this past April. Gary had helped organize this conference twenty years before; to this day, it's the oldest, best, and probably the least well known conference devoted to microcomputer technology and its effects on society. I think this meshed nicely with Gary's unassuming personality: Work softly and do good things.

Seeing The Potential

Even before Gary got involved with micros, his reputation had been established in the halls of Computer Science academia. While receiving his B.S., M.S., and Ph.D. degrees from the University of Washington, Gary invented a number of new compiler code optimization techniques that have since become standard industry practice. He was hired straight out of grad school as an assistant professor at the Naval Postgraduate School in Monterey, and was quickly granted tenure.

> When I consider the hundreds of millions of ordinary people who benefit from Gary's ideas and inventions every day, I have to think most of his wishes have been met.

Gary may have been the first person to appreciate the microprocessor industry's potential. At a time when Intel was positioning microprocessors as a replacement for random logic in fixed-function desk calculators, postage scales, and traffic-light controllers, it was Gary who advised Intel that these same chips were flexible enough to be programmed as general-purpose computers.

At a time when microcomputer software developers were debating the merits of machine-language programming in octal vs. hex, Gary defined the first programming language and developed the first compiler specifically for microprocessors. PL/M is still widely used for developing dedicated microprocessor-based control applications.

Gary was also one of the first people to recognize that even the early, simple micros were powerful enough to support a complete minicomputer-style operating system, and proved it by creating an editor, assembler, linker, and loader, along with the first file system to use floppy disks as a general-purpose storage medium. (Until then, IBM had intended to use floppies just as a replacement for punched cards.) He offered this complete "control program and monitor" package to Intel for $20,000. Intel turned him down, and CP/M went on to become by far the highest volume OS of its time. Gary sold a quarter of a million copies at $75 each—at a time when other OSes typically cost from $5000 to $20,000 and up.

Then, as the individual, standalone "personal computer" paradigm was first starting to catch on, Gary saw that the true potential of PCs would lie in their connectivity, so he developed extensions to CP/M that let computers share files and peripheral devices over a network in a way that was fully transparent to both the user and the applications software.

Continued on page 150

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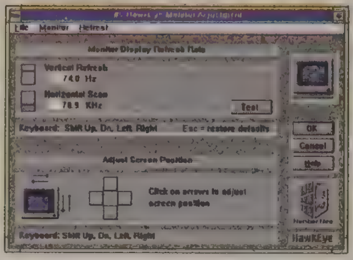

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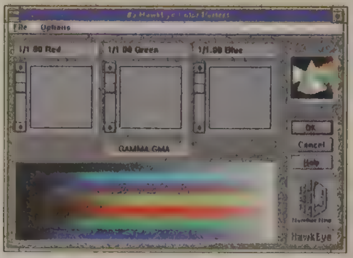

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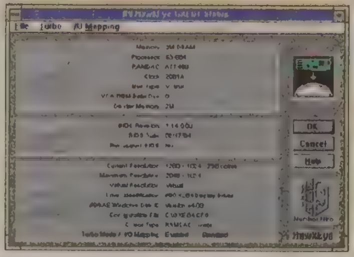

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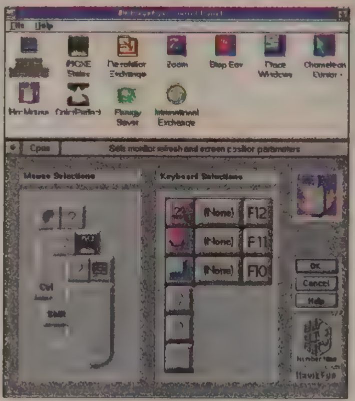

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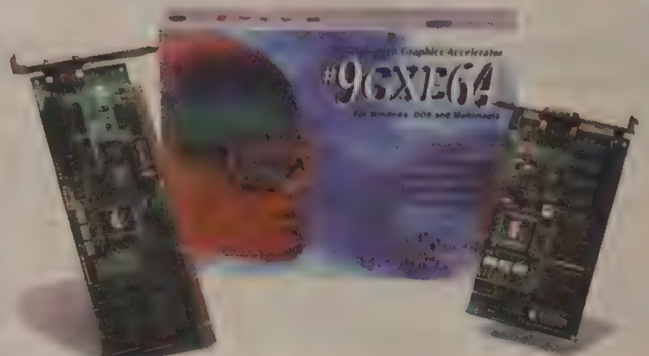

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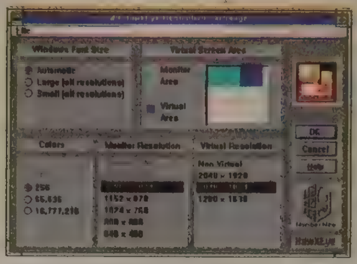

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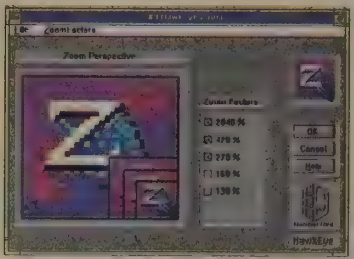

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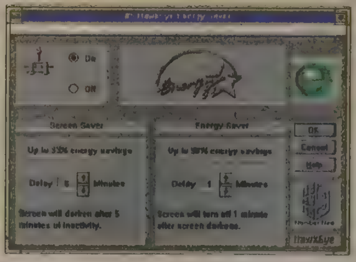

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Sending A Fax While On The Road

Plus: What The Newton Teaches Us About PDAs And PCMCIA News

Smith Corona HandiFax 1000

The ability to send faxes is an oft-touted feature of the Apple Newton and other higher-end PDAs (when combined with a portable fax modem or PCMCIA card). One problem with this is that when you are on the road, phones with modular jacks are not always available. Although many motels and hotels are changing their phones so that fax modems can be attached, not all support this. In addition, you may be far from your hotel room when you need to send your fax, and the only convenient phone may be a pay phone, which does not have modular jack access. This situation can be alleviated via the use of an acoustic coupler; this is a device that allows you to connect to the phone line through an acoustic link to the phone handset. Unfortunately, an acoustic coupler is usually a bulky device, appropriate for use in a hotel room but often not particularly convenient to set up in a phone booth.

Enter the Smith Corona HandiFax 1000 to fill this need. The HandiFax 1000 combines a 256K pocket organizer with a built-in fax modem and acoustic coupler. Measuring only 7.75" x 3.5" x 1", it fits easily in a purse or jacket pocket. How could all that be squeezed into a hand-held device? The unit is cleverly designed with a tiny pop-up microphone and speaker embedded in the sides of the keyboard, placed just the right distance apart so you can lay a typical phone handset onto them. Because the microphone and speaker pop up, they hold in place the handset as you send the fax. Like a normal fax machine, it also has a modular phone jack for noise-free connections when that is available. Of course, with 256K of RAM, you can only send faxes; there is not enough RAM for it to be able to receive.

> The HandiFax 1000 is relatively special-purpose
>
> —it is a portable fax sending device and little else.

In addition to its faxing capabilities, the HandiFax comes with basic organizer features: a simple phone and address book, a notepad, a scheduler with alarm, and a calculator. These capabilities are good enough for basic use, though there are some curious limitations; only 16 characters for the name field in the address book, for example, and no comment field; the memo pad is limited to 120 pages of information, and so forth. This is adequate for many people, however, and since the device is intended primarily as a portable fax sender, for many these feature oversights will be of little importance.

How good is the acoustic coupler? Since the acoustic coupler does not come with the usual "cups" used to shield the phone handset, you have to rely on the room being somewhat quiet for transmissions. However, to deal with this, there is a built-in noise canceling circuit that seems to work fairly well. The HandiFax will also test the line before it begins to send the fax, making sure the line quality is good enough for an accurate send (it will ratchet down the speed if the line quality is not good enough). The first time I attempted to send a fax it failed to connect with the machine on the other end; however, at the time I did not have the handset positioned accurately enough. After adjusting the handset a little, the fax went across flawlessly the second time. It seemed as though with a little practice it would be quite easy to get used to positioning handsets on the coupler for pretty good transmission accuracy. An advantage to this unit's design is that you can use a larger variety of phones; even some flip-top cellular phones, not just those with traditionally shaped handsets, as long as the mouthpiece and speaker are separated by the standard distance.

The keyboard is made of square, rubber keys which are solid to the touch and easy to locate. However, the machine itself seems to lose characters if you type too quickly; one has to type relatively slowly. The display is five lines by fifty characters–a bit small for text entry and display, though adequate to handle the organizer functions such as the address book or scheduler. One complaint is that the display can be difficult to view. Adjusting the contrast helps to some extent, but I have seen much clearer LCD screens on other palmtops. The layout of the controls is simple and functional, while the user interface, though plain, works well enough for the rather small number of organizer features available.

This is relatively special-purpose—it is a portable fax sending device and little else. If that's what you need, then this is the right machine for you. There aren't any other machines in its price range offering these features. One drawback, however, is that it is not expandable in any way (no card slots), what you see is what you get. A PC and a Mac connectivity package is available, however.

Back To The Newton

Many of you probably know a satisfied Newton user, but I bet a lot more of you know at least one archetypical Newton user: someone who was very enthusiastic about their machine for the first month or two, but who now uses it as a paperweight. What happened to these folks, and why did they give up on their Newtons despite great

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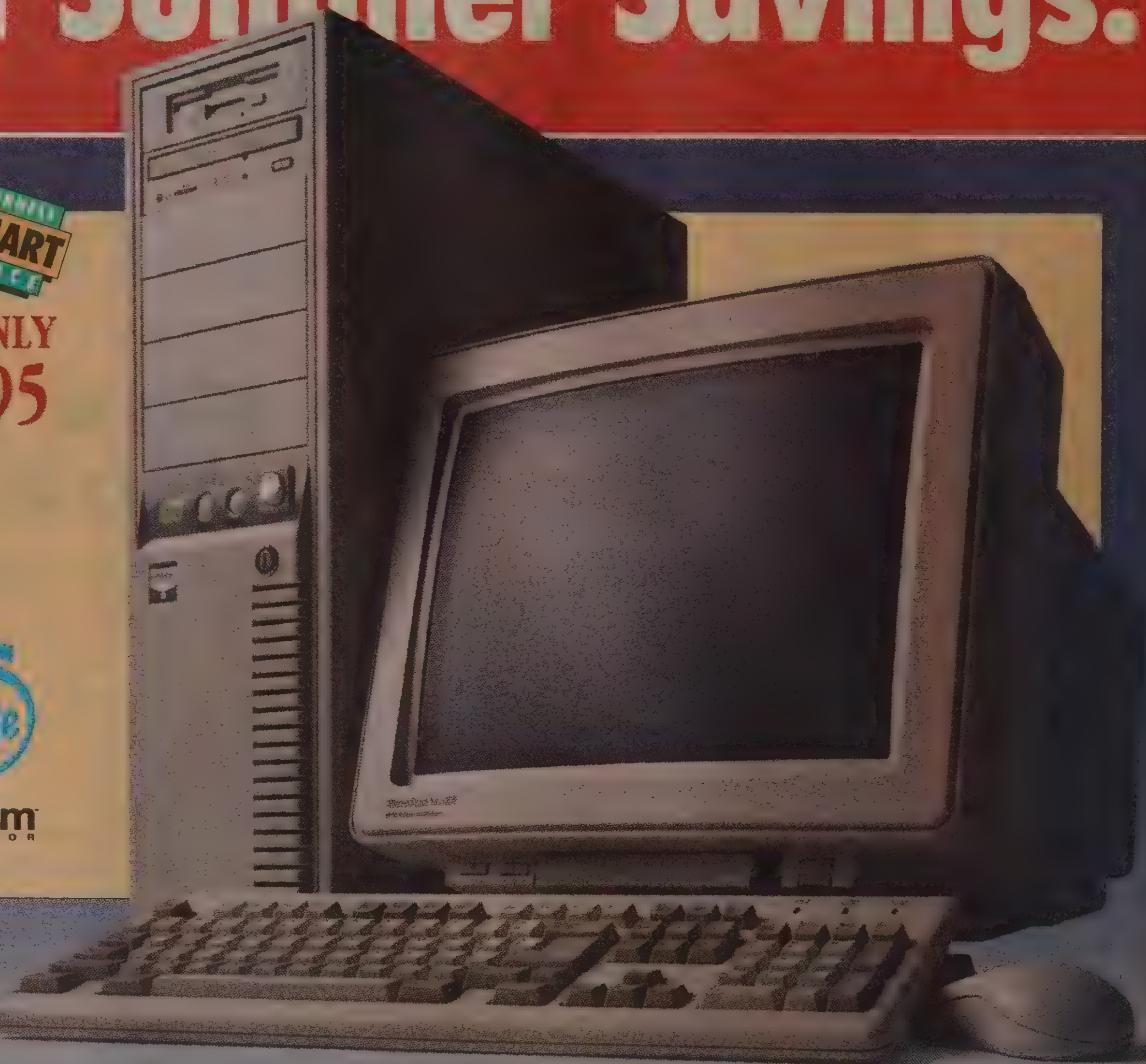

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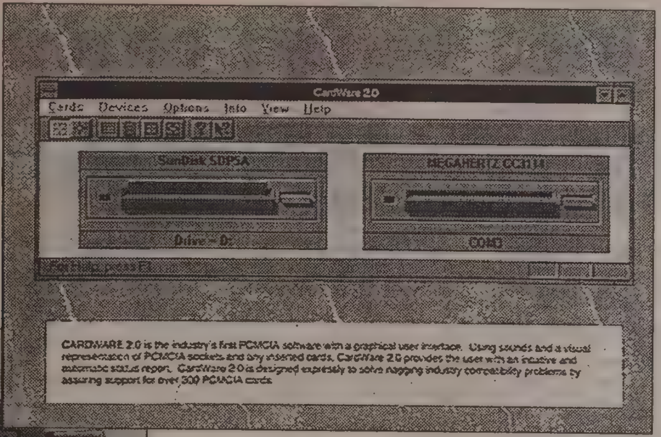

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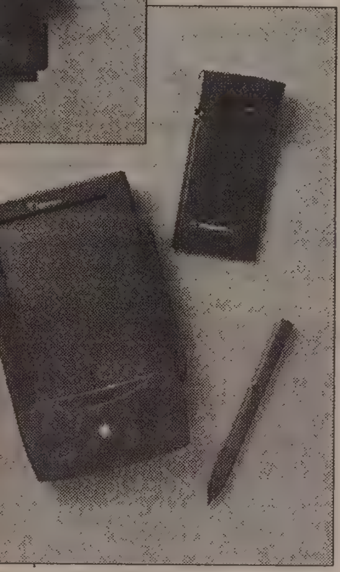

What happened and why did they give up on their Newtons despite great initial faith?

initial faith? I decided to surf the Net as well as talk to a few of them in person to see if any lessons could be learned about what not to do when designing a PDA.

Before I list what they didn't like about their Newtons, let me talk about what they did like. More than once a former user made positive comments about the size, shape, and weight of the MessagePad 100. It seemed to these folks that anything larger (for example, the new Motorola Envoy) might be too big for true portability. (Unfortunately, the new, improved MP110, though it has a faster processor and an updated ROM, is heavier than the original MP100.) Some commented that the improved speed and accuracy of the new ROMs over the originals do help make the machine more usable; in particular, the "deferred recognition" in the new ROMs helps to enable the user to quickly take notes and later review and recognize the handwriting at their leisure. However, these improvements were not enough to keep many users happy enough for them to continue using their machines.

Battery life was one of the concerns that caused users to significantly curtail or even stop using their Newtons altogether. One user commented that the batteries would drain in a few weeks regardless of whether he used the machine heavily or not; another was emphatic that a few weeks was not long enough. Use of rechargeable batteries is discouraged by Apple; the variation in voltage of rechargeable batteries could cause damage to the Newton, though several people on the Net have said they used rechargeable batteries and they work fine, if you use them carefully and do not overcharge them (though typically they only get two or three days of use per charge).

A surprising complaint, however, was that the user interface was simply too clumsy. Some commented that the machine was too slow not only for data entry but also for data retrieval because there were too many nested submenus to navigate through for certain tasks. It simply took too long to do something that one wants to be able to do very quickly, like look up a name in the address book. One person commented that when the address book had a large number of names in it, the unit slowed to a crawl when he wanted to pull out a name. One of the cardinal rules of user interface design is that simple things should be easy, and complex things should be possible—but in this case, apparently, even simple things, though possible, were not easy enough.

Of course, we've all heard of the problems with the handwriting recognition; this applies not only to the Newton but to every pen-based handwriting recognizer out there. The problem is so severe that the Motorola Envoy does not include any handwriting recognizer at all; you enter data by a little on-screen keyboard. I won't dwell on the details of this problem. Suffice it to say that even with the fastest and most accurate handwriting recognizer, handwriting data entry is always going to be slow and inefficient compared to a keyboard—what handwriting is good for is drawings and graphical data entry. The question remains whether the drawbacks of a keyboard are worth the inconvenience of using handwriting for data retrieval and entry. The jury is still out on this one, but the evidence is mounting that many people simply don't like to enter data using handwriting recognition, particularly if it is not very accurate.

A number of other things arose as well; the connectivity with PC-based personal information managers was weak at best. Some people found it difficult and cumbersome to synchronize their network PIMs with their Newtons. Another former user commented that a network PIM is far more useful since it is integrated with email and capable of synchronizing with other users instantly; as a result, there is less and less of a compelling need for the Newton. One person mentioned that the Newton was useful for sending faxes while on the road; a job that the HandiFax 1000 reviewed above could also do for less money.

After all this, where has the Newton been successful? Apparently Apple has shifted emphasis away from the general user to the niche vertical market; they are no longer going to be pushing the Newton

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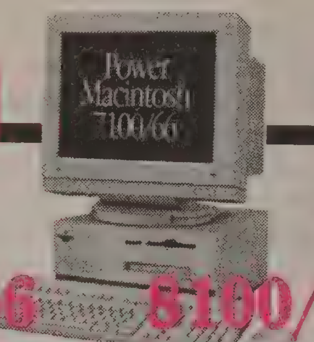

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as hard as a general-purpose PDA, but more as an assistant for professionals to get specific jobs done. A "doctor's PDA," a "salesman's PDA" and so forth. This is, of course, the place where most pen computers have been selling in the last few years, so it is not too surprising that Apple wants to concentrate there in the future. And of course, we should not forget that there are still many satisfied users of the Newton out there; just not very many of them, if recent poor sales figures are any indication.

PCMCIA News

IBM has announced its new high-capacity flash RAM PCMCIA Type I cards: using the next generation of flash memory, they are compatible with PCMCIA release 2.0 specifications. The new cards are available, in 4MB, 8MB, and 16MB sizes, only to OEMs and resellers at a little over $55 per megabyte (making the cost to you slightly higher).

Award Software has announced the release of CardWare 2.0, a software package designed to make PCMCIA compatibility issues easier. The software will automatically read the configuration of any newly inserted PCMCIA card (even those inserted while the computer is still running). The software currently works with more than 250 cards, and will automatically configure or reconfigure a system without need for rebooting or manual reconfiguration. CardWare uses a technique called "CIS Parsing" (or Card Information Structure parsing), which is intended to allow the software to automatically read the configuration of new PCMCIA cards as they are released. It comes with a graphical user interface for ease of use.

Megahertz Corporation has announced a combination PCMCIA EthernetModem card as well as a new 28.8kbps PCMCIA v.34-based modem. The EthernetModem combines a 10BaseT or 10Base2 Ethernet adapter with a 14.4kbps v.32bis data/fax modem on one card, allowing portable and palmtop computers that have only one PCMCIA slot to have both Ethernet and modem functions at the same time. Its 28.8kbps v.34-based modem card is scheduled to be released in fall of this year, after the new high-speed standard is approved by the International Telecommunications Union. The v.34 card will incorporate Megahertz', XJACK connector.

Socket Communications, Inc., maker of the EA series PCMCIA Ethernet adapters, has reduced the list prices on its Ethernet cards from $299 to $249 for tits EA 10BaseT adapter, and from $369 to $299 for the EA+ 10BaseT/10Base2 adapter. The EA series Ethernet adapters are compatible with Novell NE2000 drivers, which makes them automatically compatible with NetWare, NetWare Lite, LAN Manager, Banyan VINES, Windows for Workgroups, LANtastic, PC LAN, UnixWare, SCO UNIX, Windows NT, and Chicago. ■

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A New Hard Drive For Older Laptops

The New Kingston Data Traveler Offers Amazing Versatility

The days of making do with a small hard drive are over. The growing size of newer programs and the nearly universal acceptance of Windows, have made hard drives one of the major limitations for older portable computers. If you use Windows and a couple of applications you will need a larger drive than you imagined only a few years ago. For instance, not too long ago, DOS could not accommodate hard drive partitions larger than 32MB. Now, a 32MB hard drive would be a joke; many notebook computers today are coming with drives in excess of 200MB.

The impact of this change is that while many older laptops are still in perfect working condition and do everything you might want, their hard drives seem to grow smaller and smaller with each passing day. For desktop machines, it is fairly easy to install a larger hard drive. But in many portables, it is simply not practical to do this. The hard drive housing is usually proprietary and must be an exact match to fit into the portable. Thus, the solution has been to search for some sort of alternative or purchase a new computer.

Over the years, there have been many portable drives, but Kingston Technology's new Data Traveler DT200ex is especially well designed and can add years of service to your portable.

The Data Traveler has many features and works equally well with a desktop computer. But it is really directed towards the portable market. The hard drive is available in two sizes: 127MB and 209MB. The package includes a hard drive that fits into a base (extra units are $145 each) and a cable that connects to the parallel port on your computer. (The design lets you use your printer through the same port.) The base snaps into a rechargeable battery pack (extras are $125). These three pieces—drive, base, battery—fit together to look like a single unit.

A final piece is the power supply. It will power the hard drive or recharge the battery pack. The battery pack gives you about three hours before needing recharging.

This design offers many advantages. First, the overall dimensions, including battery pack, are 7" x 5" x 2.6" and it weighs less than 3lbs. This is small enough to fit into your briefcase. An additional feature is that the hard drive itself is removable as well as small. This tiny 2.5" drive can be transported from one location to another or simply removed for security reasons. Also, after a hard drive is filled, you can swap it with another. Extra 127MB ($299) and 209MB ($380) hard drives, called carriers by Kingston, are available.

The growing size of newer programs and the nearly universal acceptance of Windows, have made hard drives one of the major limitations for older portable computers.

Data Traveler

This drive system offers amazing versatility. If you regularly carry data between a portable and a desktop computer, Kingston Technology offers a module that fits into any 3.5" or 5.25" drive bay. This will eliminate the need to connect through the parallel port of the desktop machine.

The Data Traveler DT200ex is simple to operate and works like any other hard drive. If you currently have a C drive, it will configure itself as a D drive. After connecting the hardware and going through the installation procedure, you will need to do a low-level format on the new drive. None of this is difficult and detailed, step by step instructions are given. At each step along the way, an illustration shows you just what your computer screen will look like and instructs you what to do next.

For users who are not technically oriented, the low-level formatting procedure can be intimidating. But these instructions are so clear that most people will feel comfortable—just follow the bouncing ball and everything will go smoothly.

Kingston Technology stands behind its product with a two-year warranty on the hard drive and a five-year warranty on the rest of the components. Additionally, should you have any questions that are not answered in the documentation, its technical support staff is available. I would change nothing on this product. If you are struggling with a perfectly good portable that has a hard drive that is too small, consider the Kingston DT200ex. ■

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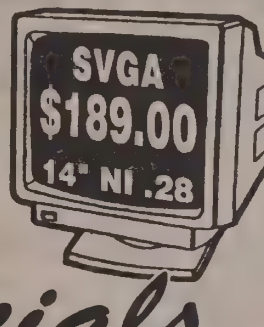

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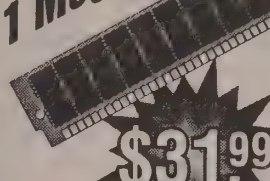

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Computer Of The Month

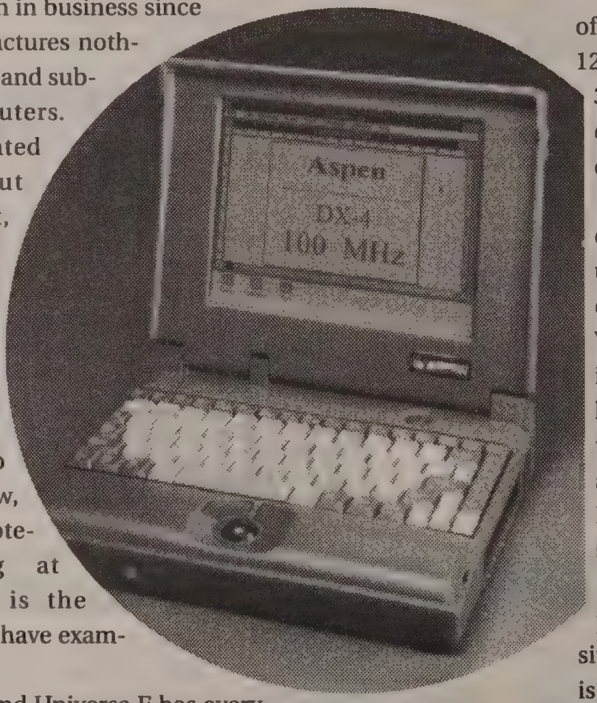
Aspen's Powerful Universa E

In general, this column highlights portables that are either offered by national companies or by powerful regional companies that offer excellent products and service. From time to time, however, I feature a computer that comes from a small company located in another part of the country. This month, I review a new and powerful offering by Aspen, a small company located in New York State, but with the resources to service West Coast customers.

RESOURCES:

Universa E Notebook Computer, $3570
Aspen Computer, Inc.
5550 Main St.
Williamsville, NY 14231
1-800-472-3273

Aspen has been in business since 1991 and manufactures nothing but notebook and subnotebook computers. Originally, I wanted to talk about itssubnotebook, which appears to be an excellent entry, but when I talked with the company representative, I was persuaded to examine its new, powerful DX4 notebook running at 100MHz. This is the fastest portable I have examined to date.



Aspen's high-end Universa E has everything you could wish for: speed, memory, audio, color, and a host of other refinements that make this worth taking a look at. If you don't like the machine once you have it, it is fully returnable within ten days.

It has the footprint of a piece of business stationery, is 2" thick, and weighs a shade under 7lbs., including the two rechargeable nickel metal hydride batteries. The display measures 10" diagonally. While several configurations are available, Aspen's standard configuration includes 8MB of RAM, which can be expanded to 36MB, 128K of cache memory, and a removable 340MB hard drive. There is a 250MB hard drive (for $115 less) as well as a 520MB drive (for $200 extra).

The built-in color display is available in either active or dual-scan passive configurations. Aspen also offers a monochrome option. Although the display is VGA, if you connect an external monitor, it supports Super VGA. Like most other high-end computers these days, the system is equipped with 1MB of video RAM, a Windows accelerator, and a VESA Local Bus interface. The result is a fast video system.

The keyboard is as good as any of the portables. An excellent built-in trackball sits just below the keyboard. The trackball is large enough to use without going crazy. If you still want to add a conventional mouse, it can be connected through the serial port on the back of the computer.

While one serial and one parallel port are built into the Universa E, a Type IV PCMCIA slot will accommodate one Type III and one Type I or II device. In today's world, these slots make additional serial ports unnecessary as modems, network connections, and additional hard drives will fit into them. PCMCIA is changing the face of portable computing!

Two nickel metal hydride batteries are included, while the AC power supply should work almost anywhere around the world. The batteries provide power for up to three hours. Recharge time, unfortunately, is about six hours for the pair of batteries. Additional batteries ($90) are available.

If you intend to use the Universa E in your home or office, you might consider the addition of a full docking station ($550), which contains two serial ports as well as two built-in stereo speakers and a bay for either a CD-ROM drive or a 5.25" floppy drive. Four expansion slots give you the space to fully customize your system. If you do not need the extra card slots, you might consider buying the port replicator ($195), which lets you plug all of your accessories into the replicator and then simply unplug the replicator's one connection when you want to take the computer away with you. The replicator, by the way, also has two serial ports.

High-end systems increasingly provide for multimedia use. Aspen builds in both speaker and microphone, but also has ports for external microphone, line input, and external speakers. In addition, its hardware is compatible with both Sound Blaster and Microsoft Windows Sound.

The Universa Series E computers come with a carrying case and have a warranty extending two years on labor and one year on parts. Replacement units are available and turnaround time is twenty-four hours. There is unlimited technical support available through an 800 number. ■

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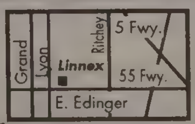

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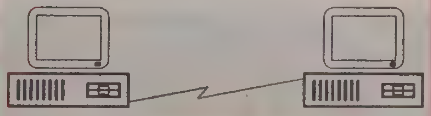

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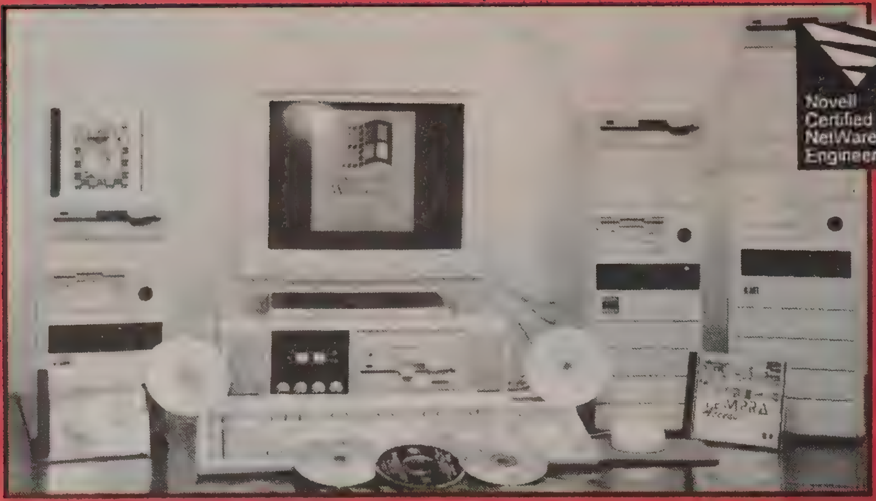

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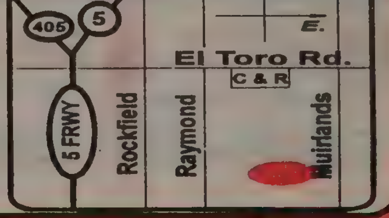

BY ROBERT MOSKOWITZ

Telecommuting—A Growing Part Of The Job Market

The Number Of Companies Allowing Telecommuting As Well As The Total Number Of People In Each Company Involved Continues To Grow

The problem first appeared in 1986, when a group of data processing clerks took their employer to court because of their treatment after they followed directions and began working from home. As the case wound its way through the courts, the employees successfully proved their employer had indeed taken away their benefits. What's more, they were expected to meet higher production quotas than employees working at the office. After more than a year of legal wrangling, the group received in excess of $1 million.

Since then, telecommuters have become a lot more commonplace around (or more precisely, *not* around) thousands of offices, and at each stage of telecommuting's growth in popularity, telecommuters' rights as employees have become much more clearly defined.

One important change is that, rather than insisting on higher productivity from telecommuters, employers are now recognizing that it nearly always comes with the territory. Productivity increases among telecommuters have been documented at 10 to 20% over levels established while working every day in the office. Today, in fact, only about one employer in twenty-five continues to feel that telecommuters would be more productive if they came into the office more often.

Across the nation, there are dozens of legislative initiatives, bills proposed and pending, and even pieces of signed legislation that not only tend to create a body of law defining telecommuter rights and responsibilities, but that tend to encourage it. In Illinois, for example, a recent law requires some fifty-five hundred large employers to develop alternatives to traditional commuting by the end of this summer—and telecommuting is among the possibilities many consider quite likely to be offered.

> In Illinois, for example, a recent law requires some fifty-five hundred large employers to develop alternatives to traditional commuting by the end of this summer—and telecommuting is among the possibilities man consider quite likely to be offered.

Many environmentalists have climbed on the telecommuting bandwagon, too. They consider telecommuting to be a powerful approach to preventing automobile pollution and traffic congestion. In fact, many people who have recently discovered telecommuting, including executives in charge of it at various organizations, and others in charge of selling products to practitioners of telecommuting at their customer organizations, seem to accept environment and traffic concerns as the major talking points behind the move toward telecommuting.

But among telecommuters and employers who favor and promote getting to work electronically, the most popular arguments for converting employees to the telecommuting styles appears to be lower turnover and higher retention of desirable and proven employees. "Without telecommuting," says one human resource manager, "we couldn't hold onto our best people."

According to surveys done by the American Telecommuting Association and others, the percentage of business organizations that support telecommuting among their employees has increased from 7 or 8% in the late 1980s to between 18 and 20% percent in 1993. What's more, the total number of telecommuters has increased from about two million to nearly eight million, over the same period.

One interesting aspect of this change in employment trends is that among major organizations a very much larger percentage are openly embracing telecommuting—as many as 40 or 45% by some counts—compared with the equivalent percentage among employers of all sizes. What's more, as few as one in five of the largest one thousand employers have still not begun to consider telecommuting as a viable option.

With all the acceptance among the so-called "major employers," one might think they would have the lion's share of the telecommuting work force. But in point of fact, far more telecommuters are employees of smaller organizations. This is probably because there are hundreds of small employers for every large employer, and these small employers—which provide most of the jobs in our economy—have been converting to telecommuting for more years than the larger organizations.

This increase in telecommuting activity means not only that more companies are allowing it, but that more people in each company are actually doing it.

For example, IBM reportedly allows nearly a third of its employees to telecommute at least one day a week. AT&T has shifted whole divisions from office-bound to telecommuting status, and continues to do so. Meanwhile, employers of a broad range of "white collar" workers—insurance companies, accounting firms, law firms, various types of consultancies, publishing companies, stock brokerages, software developers, and many others—are including telecommuting in their strategic plans.

At one time, many industry-watchers conjectured that these employers were being forced into accepting telecommuting. But in the enlightened '90s, the truth is that employers are recognizing the scarcity of good employees—hard-working, loyal, resourceful, intelligent, and skilled—and are beginning to bend over backwards to keep these people on their teams. The result: employers are looking carefully at a whole range of flexible employment practices, of which telecommuting is a prominent part.

On Becoming A Telecommuter

I hear quite often from people who write to say they would like to be hired to be a telecommuter. It's a nice idea, but I generally feel forced to suggest they forget it. There's no real possibility of finding such a position. In my experience, an employer is far more likely to convert existing, proven employees into telecommuters than to hire totally new people and let them begin work somewhere outside the office. What's more, telecommuting is not a difficult or standalone "skill" that requires special talent. My guess is that no employer is hiring specifically for telecommuting experience. The reason: It's almost certain that a proven employee can learn to telecommute; it's far less certain that a proven telecommuter can learn to do a particular job or handle a specific responsibility within a company.

Fortunately, millions of people are already qualified to do work that makes sense to be done via telecommuting. Thousands of common jobs are very well suited to telecommuting. In fact, I've compiled a partial list of job titles that have been successfully filled by people while telecommuting at least some of the time:

Accountant
Actuary
Administrator
Advertising executive
Agent
Analyst
Appraiser
Architect
Auditor
Banker
Bookkeeper
Broker
Chief executive officer
Clerk/clerk-typist
College professor
Commercial artist
Communications specialist
Computer programmer
(and other specialties)
Consultant
Contract manager
Data entry/search specialist
Department supervisor
Designer
Economist
Editor
Employment counselor
Engineer
Estimator
Financial counselor
Graphic artist
Interior decorator
Interviewer
Journalist
Lawyer
Loan officer
Manager
Marketing consultant
Order taker
Paralegal
Professor/teacher
Public relations professional
Purchaser
Realtor
Reporter
Researcher
Salesperson
Social worker
Statistician
Surveyor
Telemarketer
Telephone operator
Trader (stocks, bonds, commodities)
Training specialist
Translator
Travel agent
Underwriter
Word processor
Writer

Regardless of whether or not your job title is listed here, a great many tasks that are part of many thousands of different jobs are perfectly appropriate to be done while telecommuting. Here is a partial listing:

Mental Tasks You Can Do While Telecommuting

Analyzing
Auditing
Comparing/contrasting
Creating
Modifying
Planning
Problem solving
Thinking
Visualizing

Manual Tasks You Can Do While Telecommuting

Computer work
Contract preparation/analysis
Correspondence
Data entry/correction/manipulation
Designing
Filling in/processing forms
Meeting via telephone or other medium
Numerical/financial calculations
Project analysis/management
Reading/studying
Record keeping
Researching/fact checking
Sales/contact
Telephone answering/customer service
Writing/typing

But just having the right job title, or the right mental or manual tasks as components of your job, is not enough to qualify you for telecommuting. The critical factor in becoming a telecommuter is often whether or not you have demonstrated to your present management your ability to work independently.

Reading between the lines, you can probably recognize that this consideration actually translates into whether or not your supervisor feels you will work as hard as a telecommuter—where he or she is not watching you constantly—as you now work at the office.

"Management by results" is the standard policy to suggest to supervisors worried about lazy employees shifting to telecommuting status, then getting paid to sleep late or lounge in front of the TV. But you may not even get to the point of suggesting this approach if you haven't proven yourself thoroughly in the past.

One good way to "ease into" telecommuting with a reluctant boss is to start one day at a time. Pick a day or a week when the rush is really on. Then ask if you can't work at home—or elsewhere out of the office—one day "so you can really get some work done." Make sure everyone knows how much you accomplished this way. Next month, find another good day for telecommuting. After a few of these successful forays beyond the office pale, you may be in a position to suggest working this way on a more regular basis.

Top Telecommuting Employers

Recent surveys seem to indicate that the following companies, if not the best employers for people who want to telecommute, are certainly high in the ratings.

Pacific Bell
140 New Montgomery St.
San Francisco, CA 94105
Telecommuting Positions: engineer, computer programmer, product analyst, market forecaster, market planner

California State Department of General Services
601 Sequoia Pacific Blvd.
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486 DX4-100	825
486 DX2-66	455
486 DX-33	355
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MAG DX-15 .26 NI	415
MAG DX-17 .26 NI	695
Sony 15" SF .25 NI	470

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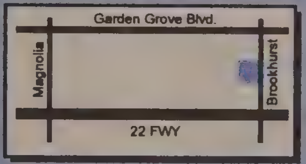

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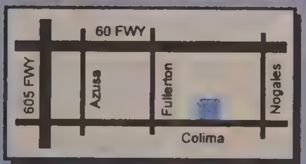

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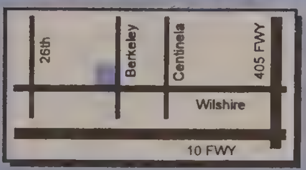

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Los Angeles, CA 90012
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AT&T
550 Madison Ave.
New York, NY 10022
Telecommuting Positions: sales representative, project manager, public relations manager, telemarketing representative, attorney

General Electric—Plastics Division
214 7th St., Suite 401
Parkersburg, WV 26102
Telecommuting Positions: salesperson, administrative assistant, programmer, analyst, manager

The US Government
Office of Personnel Management
1900 E St., OPRD Room 6462
Washington, DC 20415
Telecommuting Positions: expanding rapidly, virtually all office positions are eligible for classification as a telecommuter

US West, Inc.
7800 East Orchard Rd.
Englewood, CO 80111
Telecommuting Positions: manager, computer analyst, computer programmer, records manager

Travelers Corp.
One Tower Sq.
Hartford, CT 06183
Telecommuting Positions: researcher, claims processor, manager, computer programmer, actuary

JCPenney
100 N. Corporate Dr.
Brookfield, WI 53005
Telecommuting Positions: customer service representative

But don't expect to be hired to telecommute. As I have indicated, you're more likely to gain telecommuter status after you've established yourself with your employer. These companies are simply more open to allowing telecommuting than some other employers.

Problems With The Data Superhighway

Now that the White House is embracing the concept of the data superhighway, a great many telecommuting experts and advocates are foretelling the dawn of the great age of telework.

But there may be some problems en route to this heaven on earth. For example, many people feel that the average worker who becomes a telecommuter will not be able to earn a decent living very long. As the data superhighway speeds up the process and brings down the cost of sending information around the globe, employers sending out the typical data packet will be more and more likely to seek out and find the cheapest laborer to process it. High-living yuppies in Aspen and Big Sur will be underbid by Indonesian, Indian, and

continued on page 146

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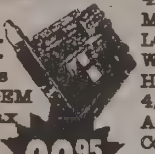

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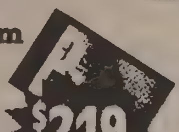

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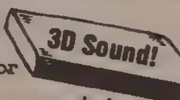

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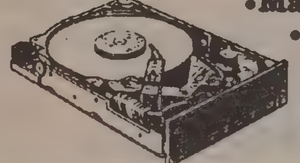

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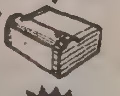

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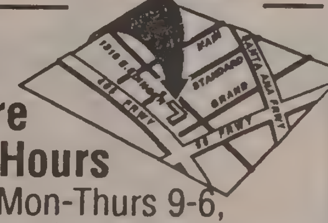

INTERNET • BY JOHN S. QUARTERMAN

Networked Communities: Real or Virtual?

It Is Hard To Find Anyone Who Uses Only A Single Medium For Communication

I hear much talk of virtual communities online, virtual communications, virtual relationships, etc. Anything that involves use of computer networks seems to have taken on the adjective "virtual".

Why does no one refer to a voice heard over a telephone as virtual?

Personal Communications

I passed through Boston a few weeks ago—famous for arts, culture, and high-tech industry; people there brag about the number and quality of its universities. I stopped to see Peter Salus, who knows a dozen languages, writes books, has been a college dean in his time, and goes to the opera and the symphony.

I asked him, "Do you communicate with more people online, or here in Boston?"

He said, "Online, of course."

So I said, "Which kind do you see more of in person in a year?"

"People I usually communicate with online."

"And in a month, in a week? How small do you have to shrink the interval until you see more people who live right here in Boston than people you know over the net?"

"Why, never, no matter how small."

I don't think Peter's experience is all that unusual, even if he is more gregarious than most.

Even those who "see" more people face-to-face, perhaps due to participating in church, school, or community activities, they often use the net to keep in touch with people they would not otherwise. Even if most of these online correspondents are people who formerly lived in town, many of them wouldn't still be correspondents without the net.

Media And Community

Some people argue (somewhat confusingly) that online relations and communities are not real because they are not completely online. That people who communicate online also use the telephone, fax, paper mail, and even meet face-to-face. And that therefore virtual communities aren't really online, only virtually online. The point of this argument that some people make seems to be that a community can't be real unless all the interactions of its members are conducted using the same medium, that a real online community must be completely online, apparently on the assumption that a real offline community conducts all its interactions face-to face, or at least through the same medium.

But it would be very hard to find a community that conducted all its interactions through the same medium. Even someone who lives in the same house their whole life is likely to give a birthday card to a housemate, or call a friend at work, or even see a relative on television. It is hard to find even a single person who uses only a single medium to communicate with anyone else anymore. It's not clear that anyone ever did, for that matter, at least not anyone literate since the invention of writing.

Work And Workers

Because of online communications I have been led by my friend Toru to the best spot to see fireworks in Tokyo; flown from Warsaw to Caracas to Houston to see many of the same people in different meetings on three continents in one month; and met many new people who, though of different nations, languages, religions, and educational backgrounds, understood each other because of their use of this technology. A network engineer in Cairo works, talks, and acts much like one in Tokyo, even if one is female, Muslim, and young, and the other is male, Shinto, and venerable. Users of network communications are perhaps more diverse, but the more they communicate online the more they gain certain expectations of convenience, speed, and geographic scope of communication.

Because of this technology I can work in Matsumoto, Buffalo, or Valdosta almost as well as at my office, and most people don't even know where I am at the time, nor do they need to. Because of this technology we can write a book in five months, not a year.

There is a downside. Diversity of contacts through networks can lead to difficulty concentrating on the task at hand; it's hard to get that book out in five months if you can't bring yourself to refuse flying to Prague in the middle. There is no longer any border between working hours and nonworking hours (except for dealing with those who still believe in the telephone). Housework may not get a lot of attention when you don't see the house much. And people not on the net tend to be uncomprehending, not to mention difficult to communicate with.

Online And Offline

So networks are good for work. They are also good for play, too. Role-playing games with participants scattered across the world are common, and many people correspond for the amusement of it. Religion and philosophy get discussed online. Already some religions probably would not exist in their current form if not for networks. Sex is one of the most popular online topics, complete with quite graphic images. It's true it's difficult to actually hold a religious ceremony online or to have sex online, but these are activities that usually take place in specialized surroundings such as churches and bedrooms offline. People don't generally actually get married online, but they don't generally get married on the telephone, either.

Essentially any human activity can either take place online or be facilitated or caused by online activity. Where is the source of this stigmatization of networked activities as virtual, then? Some of it is probably just people (especially the press) latching onto a trendy word. Some of it is probably reaction to the huge amount of hype that has been printed and said about how networks will make everything so much better. But there seems to be more to it than that. Let's look at the example of work again in more detail.

Initiative And Interdependence

The prevalent model of work appears to be

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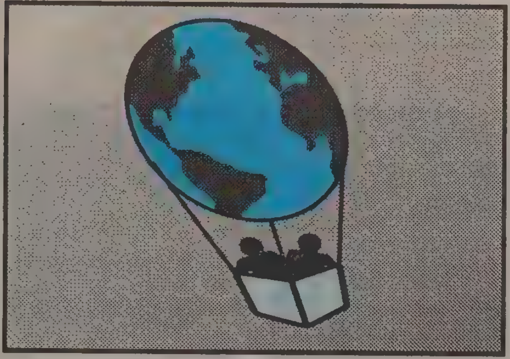

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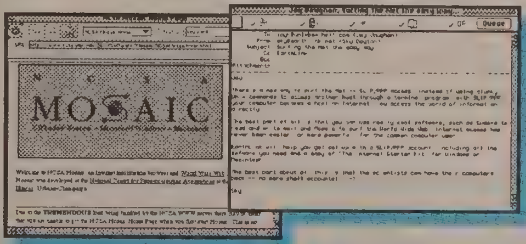

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that of the corporation with its employees who go to a physical office and work eight hours a day, five days a week. While there, they work on small tasks handed to them by their superiors, and with workgroups assigned by those same bosses. But the 9 to 5 world of corporate America has never been the only model of work. Academics and farmers have always worked long hours according to projects and seasons, and the responsibility for who they work with and how is largely their own. Networks promote such independence of initiative together with interdependence of workers. Typing this article on an airplane, I start to send mail to someone to clarify a detail of an anecdote; because I know he reads his mail often I will probably get an answer within minutes. Then I remember I'm not connected here in the air. I could compose the message and send it when the flight arrives, but by then I'll be finished with the article. Why don't airplanes have serial ports or Ethernet connectors next to the headphone jacks at every seat, anyway? I've heard of one fellow hooking a modem to a skyphone with a coupler and tape. I suppose you could use a radio link, if the captain didn't object. But a ground link for the aircraft network shouldn't be that hard to do.

Subversion And Secrecy

Networks are subversive. They destroy the pyramids of power corporations have constructed for decades, thus making hordes of middle managers redundant or in need of radical retraining. They permit workgroups to form as needed for the project at hand, and among workers not necessarily of the same geographical location, salary level, or company. Once information is online it travels very fast and is much easier to find, so secrecy as a management tactic doesn't work well.

Corporations are not the only kinds of organizations that are affected. For example, are universities as needed when the online library is distributed worldwide, and your research colleagues are, as well?

Networks also break the oligopoly of the traditional press. No longer do you have to accept all your news being filtered by a talking head on TV to fit in between the opening automobile accident and the sports. No longer do you have to accept detailed news being subject to the house style and prejudices of newspapers. You can get wire services such as Reuters or AP directly, including everything, not just what papers find fit or politically safe to print. In many cases you can go directly to the source. After CNN was thrown out of Beijing in 1989, eyewitnesses faxed out stories about tanks crushing demonstrators in Tienanmen Square and these stories were typed in, posted on computer networks, and thus immediately distributed worldwide, as events transpired. When Gorbachev almost fell in the coup of 1991 and Yeltsin was holed up in the Parliament building, electronic mail flowed in and out of Moscow even after all the traditional media had been throttled. When Scuds fell on Israel, some people on the ground had to pause to get their gas masks before continuing to converse on IRC (Internet Relay Chat) in real time with people all over the world. And on the networks you can discuss events as they happen, with interested parties wherever they are. You can use networks to influence elections by gathering crucial information and distributing it quickly to your staff, the press, and the public. In the most recent US presidential election, two of the three major candidates, including the winning one, did just that.

These networks aren't fragile, either. US forces couldn't destroy Saddam Hussein's command and control network. Turned out

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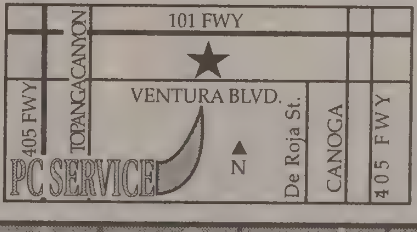

it was built using the same kind of technology as the Internet. If one segment was damaged, it just routed around it. If one segment of the worldwide Matrix of communicating computer networks is damaged by censorship, the rest just routes around that, too.

Fear And Sarcasm

Some people take to a networked environment like a bird to the air. Others take to it like a fish out of water. Many people fear they will be the latter and don't take to it at all.

That, I think, is the source of this virtualization of networking: fear. Fear of not being able to cope with something that appears so strange. The same fear that accompanied the appearance of the personal computer. Fear of being laughed at, or left behind, or losing one's job. Ironically, fear is the one thing that keeps the most people from learning how to use networks and thus lose the object of their fear.

Oh, I'm sorry, irony is near to sarcasm. And sarcasm is one of the things that really gets people on edge about networked communicatons. It's not only not filtered for content like television news, it's also not filtered for means of expression. If somebody uses words you don't like, in general you can't force them not to! And the TV doesn't talk back if you criticise it. People on computer networks do. Plain ASCII electronic mail, the least common denominator of online communication, is a thin screen indeed between people compared to the one-way glass of television and newspapers.

Play, Necessity, And Familiarity

What will bring more people to use networks? Peer pressure, fascination, games, and economic or social necessity. I've noticed an increasing number of parents getting online access for themselves so they can correspond with their offspring in college, for example. As networks become more widespread, their uses will become more apparent to more people, and they will become about as feared as the telephone.

Speaking of which, why does no one refer to a voice heard over a telephone as virtual? It's not the actual sound spoken by the other person, you know. It's been converted to an electrical signal, possibly digitized, and probably amplified, filtered, compressed, sliced, diced, and blended before being reconstituted as the sound waves you actually hear. It may be a remarkable simulation of the original, but it is not the real thing: it is virtual in a very literal sense. Why don't we call it that? Because we are all familiar with it.

Earlier technologies probably suffered from the same fear. The ancient Greeks thought the increasing popularity of writing was a bad thing because people would forget how to memorize. They were right; who can recite the Odyssey these days? Yet writing made a lot more information available.

Alphabetic scripts probably had a hard time when they were first introduced. Imagine a scribe required to learn one of them. "At least with hieroglyphics it's obvious what the word means by what it looks like!"

People fear unfamiliar technology. They pick words to trivialize it or stigmatize it, hoping that will make it go away. It rarely does. ■

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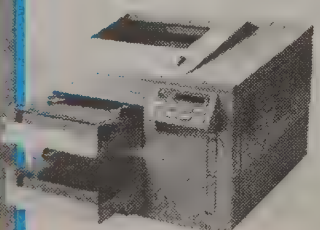

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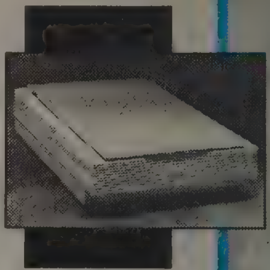

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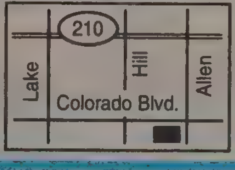

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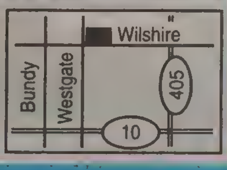

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UNDER A
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Under A Killing Moon:

Heading Into The Uncharted Territory Of CD-ROM Movies

By Michael Robin

Cover And Coverstory Photo By Greg Allen

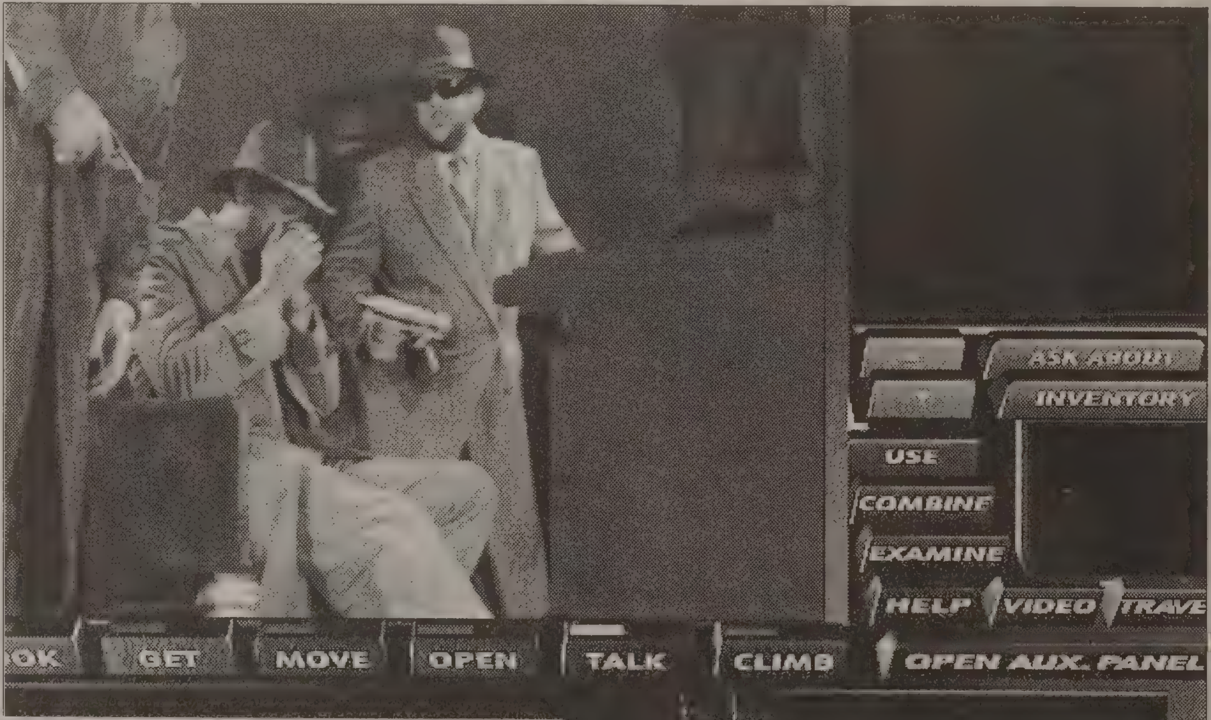
An Interview With Chris Jones Of Access Software

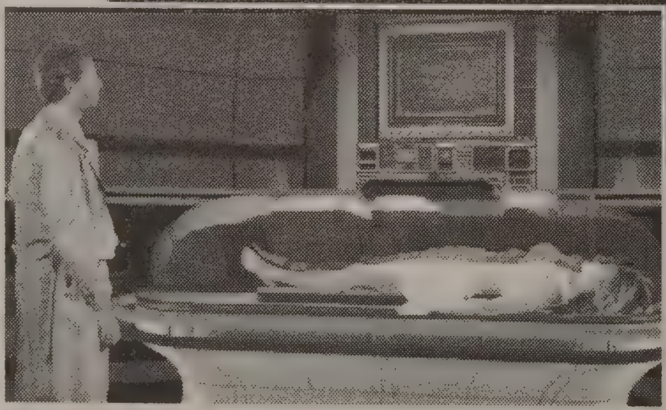
Interactive CD-ROM movies represent the convergence of movies and the multimedia PC, giving you the drama and excitement from movies with the opportunity to affect the events on your screen. For many in both of these industries, this also holds the promise of becoming the next alternative in home entertainment, taking its place next to the television and VCR.

Last month, a group of about one hundred people was invited to the Academy of Motion Picture Arts and Sciences, in Beverly Hills, to see the latest movie of this genre. Under a Killing Moon, by Access Software, fills four CDs and includes close to three and a half hours of video. But more impressive than the sheer size of this DOS-based software package, is the attention to detail this Salt Lake City, Utah-based software game and entertainment company paid when creating its first interactive CD-ROM movie. With a budget over $2 million, Access was able to attract widely recognized and respected professional actors—Brian Keith, Margot Kidder, Russell Means, and James Earl Jones. Complementing the acting, Access has created a complex world for you to enter; a world whose detail and flexibility make it surprisingly realistic.

Set in the year 2045 in San Francisco, Under a Killing Moon takes you into a virtual world where you become Tex Murphy, private investigator. An opening ten-minute movie introduces you to Tex and sets up the beginning of your adventure. You see Tex flying through the city in his "speeder" vehicle; hear him describe what he is thinking and what he is feeling just before the game starts. There are also flashback sequences that give some history of what you are going to be involved with.

After this introduction, you play the character Tex—guide him through the city, influence the dialogue, search for clues, and view much of these events through his eyes. Tex is hired to find a missing statuette, but once he finds it, he is knocked out and the statuette vanishes again. As his search continues, Tex finds himself chasing the members of a cult bent on destroying the world, finding a computer chip capable of tremendous destruction, and, finally, solving the crime.





Interactive CD-ROM movies offer the potential for combining the best of Hollywood with the best of Silicon Valley. In this situation, Hollywood represents the accumulated wealth of knowledge for telling a story visually as well as the accumulated financial wealth from the movie industry as companies such as Time Warner, Disney, and Sony invest heavily in the new medium of digital home entertainment. On the other hand, Silicon Valley offers the technology, both hardware and software, to bring interactivity to digital entertainment along with the creative entrepreneurial forces found in smaller, leading-edge high-tech companies. The result is to offer the viewer an active role in digital home entertainment—something far more interactive than the remote control of the television or VCR and a higher level of entertainment than shoot-'em-up or dungeons-and-dragons software games.

The day of the premiere I met with Chris Jones, cowriter, director, lead character in Under a Killing Moon—as well as being executive vice president and partner at Access Software— to discuss his thoughts and goals in making interactive movies, the convergence of Silicon Valley and Hollywood, and prospects for this alternative form of home entertainment.

What is the difference between your earlier computer games and this new CD interactive movie?

When we initially started this, which was just about two years ago, we said, "OK, we want to fuse the movie and the idea of the game together to come up with an alternative form of entertainment that could be judged along the same lines of, say, a movie or TV entertainment.

"The computer can do certain things, movies do certain things. Let's combine them to come up with an entertainment piece that features the strengths of both and tries to get out the negatives. With movies, you are watching them as a passive, two-dimensional experience. People tend to look at computers as either a hassle to deal with or childish or, maybe, 'This isn't really what I want to do for entertainment, I don't want to think that hard. I want the computer to do things for me.'

"But with the computer, if we do things correctly, we can bring a three-dimensional aspect into the entertainment experience. We want to give people an emotional tie and a feeling that they're becoming part of this space that we are creating for them."

For the user or audience, what does this new entertainment experience involve? There are several different ways to play this movie...

When we did Mean Streets five years ago, the technology was not quite coming up to spin. We could make the character talk, but not very much. He could have a few words. But in general, because of memory constraints, we could not do as much as we would have liked to do.

We decided to make [Under a Killing Moon] a CD. We were not going to worry about a disk-based product or anything else. We concentrated totally on what the CD is able to do, which is much more storage. Right off the bat, this

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meant we were going to make a game that was a thousand times bigger than we did with Mean Streets.

What we wanted to do is give it the feel of a movie—good acting, realistic backgrounds, and a damn strong story. Plus, we wanted it to be funny, that the characters deliver their lines in a believable and natural manner, and to make sure there is tension. In other words, we wanted all of the things that you would normally consider to be part of the movie; that makes the movie experience something rich and a reason to go.

We also wanted to do what all of us wanted when we were kids—to be up on screen, to be part of this action, this activity. That does not mean you want to be an actor, but you want to be in that world. You want to be part of the magic that this environment offers, and that's where the computer comes in. We feel that through the computer we can create a world that you can almost step right into.

Sitting in front of a computer, what can the user do?

In our minds, we have created a world here, a three-dimensional world that exists. In other words, you pick up the mouse and you start moving around. This is a real world. You can go out on Texas Street and walk down this street that looks pretty real; you see a character and can start a conversation if you choose.

By typing in words?

No, you don't type in words. What you have are choices. Again this goes back to the elements of the movie. We don't want to make things cumbersome for the player. We don't want the interface to get in the way. But we want to make sure you are directly involved, so you can't just go up to someone and they immediately start spouting to you. Every time you come up to a conversation we give you three choices. But instead of just reading exactly what you are going to say, which takes away from the responsiveness of the situation, we give what we call attitude buttons.

We give the nuance of what this person's going to say. You choose whether you are going to be "hard about it," or perhaps what we call "pathetic groveling." It isn't going to be the same choices every time; there will be three distinct choices based upon the situation. The reason we do that is to keep the flow going. In just two words I know that I am going to deliver a back-handed compliment and the action keeps going.

The other advantage of this technique is you haven't heard it yet. If you read the conversation, in your mind you already have a psychological set of how that should be delivered. Then you hear it. It is getting too repetitive. We want to pull all those elements out. We want to say "here comes a back-handed compliment." And for you to think, "Yes, this will probably be funny."

If we deliver it in a funny way, we've done two things. First of all, you've made a choice so you're involved with it—it's an active choice that sounds exciting and would be interesting to do. Second of all, you hear it and it's funny. Then you get to hear the response to it. So bam, bam, bam you are delivering something that keeps the tension, the timing, and the pacing of the game going so that people feel like they are actively involved.

What is Under a Killing Moon about and where does it come from?

It's an extension of the Tex Murphy character we started in 1989 in a game called Mean Streets and in another game we did three years ago called Martian Memorandum. Tex was the main character in those two pieces of software and he is the main character in Under a Killing Moon as well.

He's a down-on-his-luck private investigator in the tradition of a Philip Marlowe or a Sam Spade. We've taken the genre and moved it ahead a hundred years, while still trying to keep the feeling and the mood and motif of the detective of the 1940s—the trench coat, the hat, the way he looks at the world

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with a cynical eye. But we do it on the light side.

The character that people are interacting with, manipulating, is Tex?

Right, you are Tex Murphy. You are playing a character from the start, you are playing this down-on-his-luck detective.

And what they see is Tex?

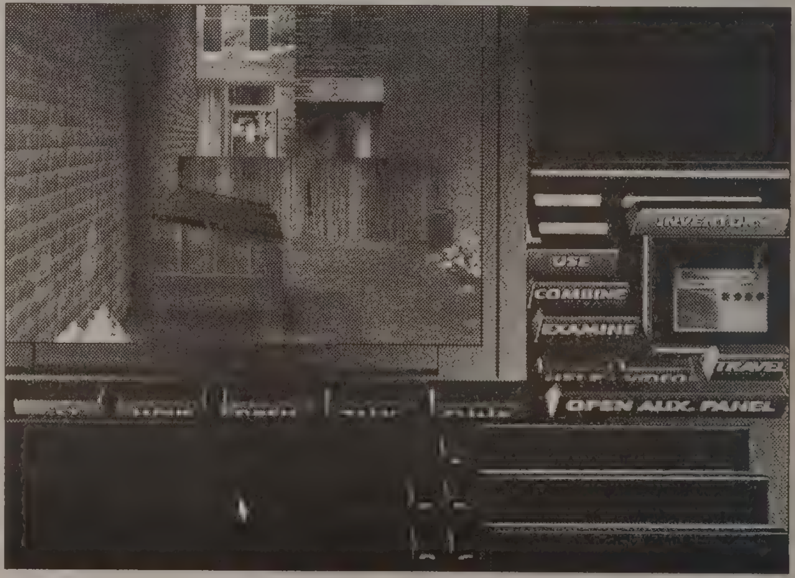
We have two points of view. One is through your eyes.

When you come into his office, for example, it is all first person. You are seeing the world through Tex's eyes, and it is a total virtual reality situation, a total simulation of his office. Let's say, you go over to his desk. You can open the drawer and look down into his desk. But, if you are not looking from the right angle you will not see inside the drawer. Again, this is not from a third-person view of somebody walking around the room. This is through the character's eyes.

Here you are totally active within the environment—you are making the choices, you are picking up things, you are looking around. You are not just waiting for something to happen. You have to make things happen in this world.

Now, let's say you go down onto the street and talk to a character. You will have choices as you go through a conversation. The choices go off in any number of directions, perhaps letting you talk to a character for quite awhile. Here, you see things from a third person's view. You might see both the characters together talking or you might see another character's perspective looking back at Tex, which is your character. We try to move the camera a lot when we're doing this. One response might elicit a camera angle from here, another response might be up from here, another might be a close-up.

The characters react in a particular way and you will make other choices.



But all along you are gathering information. Someone might give you a name or other bits of information that are added to a list. By the end of the game you might have forty or fifty different objects on this list that you can then ask every character about, to see if they have any other information on these particular items. They might want objects and you have to find them.

One of the disadvantages is that people look at this and say, "This feels like a game to me, I have to go through and solve certain things." Yes, you do. But in order to keep the timing and the pacing of the movie that you are watching, there are full-blown hints in the whole game. You don't have to look anything up in a hint book or call a special number or pull yourself out of the environment that you are in, which all tend to give it that stop-and-go feel. You just hit the Hint button. The game knows exactly where you are, it knows exactly where you are stuck. There are lists. You just say, for example, "How do I get

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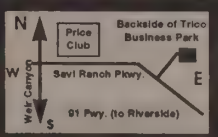

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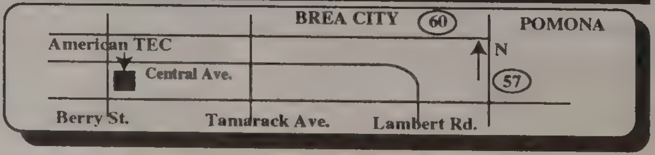

Killing Moon *continued*

the bum to talk to me? I've come to the alley and he just ignores me, I can't get anywhere with him." Just click on the Hint button and you are on your way.

Is it designed to be played in one sitting?

No. If you wanted to you could sit there for a couple of days.

One of the things that we've done is to give rewards for each period that is played. Basically, the story is divided into seven days. The first case that you saw might not even be tied to the end case, but you get a reward—a nice video at the end, then a hint or teaser for something coming up.

And all roads lead to the same ending?

Yes.

I've seen pieces that give you different endings depending upon the path you choose.

We thought a lot about that. The reason we don't is because we're storytelling. I've seen movies where you get to pick the ending. But there is really only one satisfying ending in any of these situations where you solve a mystery or get the girl or whenever there is a reward after you do all these things right. We felt it would be a waste of our resources and time going down avenues that aren't satisfying.

We decided to concentrate on the story itself. Whether you are playing a detective, a secret agent, any number of characters, you have a purpose, you have some goal. To deviate from that in this format is a waste of time.

Let's turn to your role in this. You are a partner in Access Software, you're the star and lead character, you cowrote and directed it. Where do you come from on this? Do you approach this with an acting background? A tech background? A business background? How did you get yourself in this mess?

All of these.

Some of the guys who work at the company are relatives of mine, people I've known all my life. And what we did when we were young was make movies. It's what we loved to do. Ever since I was thirteen-fourteen years old, we would spend our summers making movies. When you are the one who makes the movie, you get your satisfaction when you show them to family and friends. You see what works and what doesn't. You see what you thought might be successful and where you really screw up. But the whole fact of it is that you want to entertain people, you want them to have a good time when they see your movie.

There are two ways of looking at this. You could do this the Orson Welles way, which is where the critics love it, it's very deep, and it's something that most of the public never sees. Or you could do something that you consider to be an entertainment vehicle, more along the lines of a Spielberg idea, which takes these various elements to get this really rich look on the screen. But it is also very entertaining.

We wanted to entertain people. Every chance we got we were making films, making movies. When I went to school with these guys, I went to business school. But again, at the same time we were still doing all these things. Back in 1982, when Bruce Carver and I started Access Software, we kept thinking, "How can we make movies come out of this?" At that time, the technology was so far away from doing what we wanted that it fit in the realm of "yeah, we will produce games, and golf products, and all." But always, in the back of my mind was doing this.

How did you attract actors such as James Earl Jones, Brian Keith, Margot Kidder, and Russell Means?

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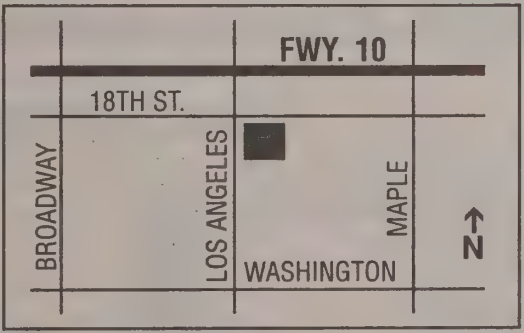

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We looked at a lot of other pieces that were out there. The one thing that really stood out was how bad the acting was. It was a very stiff medium.

Working on computers has drawbacks. There is no way around that. Everything comes off the disk at a certain speed. When we were dealing with floppies you don't have very much storage. But even so, everyone wanted to put a little story in the front of these products. You would watch them, but it was just awful. The scripting was bad, the acting was bad, all of these things were almost laughable. People would spend a lot of working time on them, but you would want to click past most things and you would never want to watch them twice.

When we started this project we knew we had to get the acting caliber up if we are going to be considered a legitimate entertainment alternative. That's when we asked ourselves, "What are the chances of getting people who really are professionals? Who can bring something to the table that we just cannot duplicate by using models or people who maybe had a little theater experience." We talked with Catrine McGreggor [a casting director and location producer], who is a friend of my brother. "What are the chances of getting some people in here that can really do a job for us?" She knew Margot [Kidder] and told us, "I don't know, but I'll talk to her and see."

She [McGreggor] almost had to convince them that this wasn't going to be a joke. That we were taking this quite seriously, and that we wanted top-notch talent to be working on this. Most of these actors couldn't relate to this at all. The only thing they had ever seen like this was for Nintendo and Sega and they kept thinking, "What are they going to do to my image? Am I going to look like PacMan? Am I going to look like Mario Brothers?"

The answer is "No! We have better resolution than TV and your voice will sound just like your voice. You can put subtle nuances in your performances. We are going to give you a script that's funny and a character that's believable."

When you put all these elements together this is just an alternative medium for actors. Whether it's movies, or television, or interactive movies, this is also a legitimate form of entertainment. With the machines as powerful as they are we can really do something to allow the actor to give a performance on this screen. It is not just saying words. It is really acting. Once Margot saw what we were doing with the virtual reality stuff and how strong the images looked she became involved in this project.

Does this require a different business model when you are working with professional actors? How did you resolve issues of rights and pay?

Most of these guys work with flat fees, but things are going to change. We were able to get them involved because they saw the potential from it. A lot of them think that if this is successful, it is going to open up opportunities that will be very lucrative for them. Eventually, if you are pulling in people like a Tom Cruise or Arnold Schwarzenegger there will be residuals and royalties and all the other things that go along with making a movie. But today a lot of the people realize that we are spending a ton of money trying to get this market established. I think that the Screen Actors Guild and the other organizations and agencies, like the William Morris Agency, realize that if they work with this and nurture the business along, that it is going to present great opportunities for them down the road. As more homes have CD-ROMs, and the better these products become, more people are going to be buying this as an alternative to movies and television. When all of this happens, they will be able to negotiate better deals and it will be a very lucrative deal for the actors.

Was making this more like a traditional movie or software?

From a business perspective you just have to say, "What's it going to cost me for these people?" You structure the royalty rates and then just figure your breakeven point. This is not much different for us than it has been in the past. Software's been involved with this process for quite some time, for instance with personalities from the sports industry, such as John

continued on page 167

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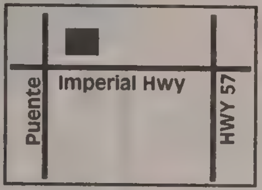

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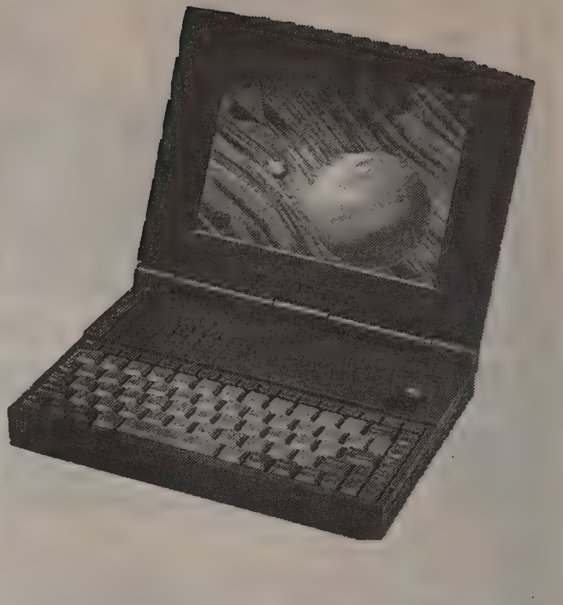

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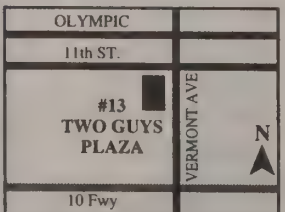

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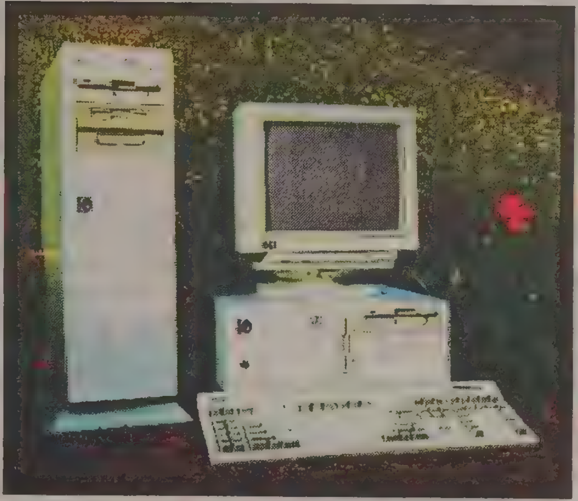

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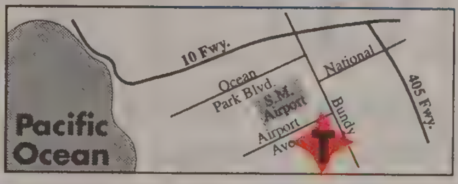

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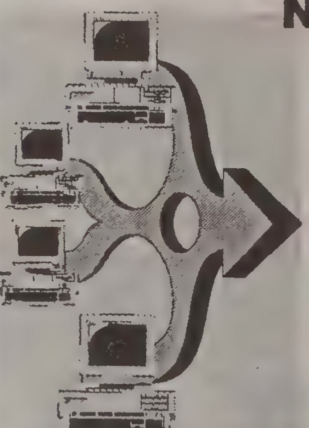

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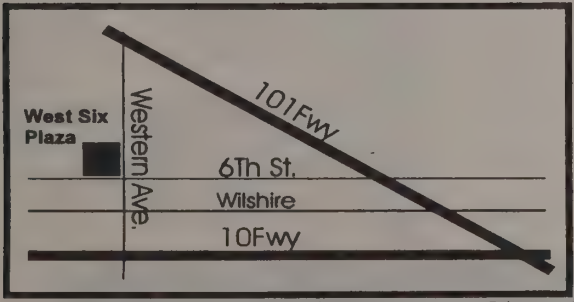

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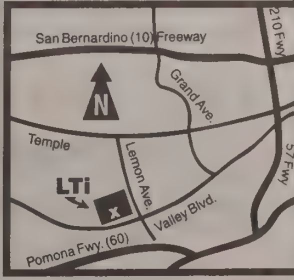

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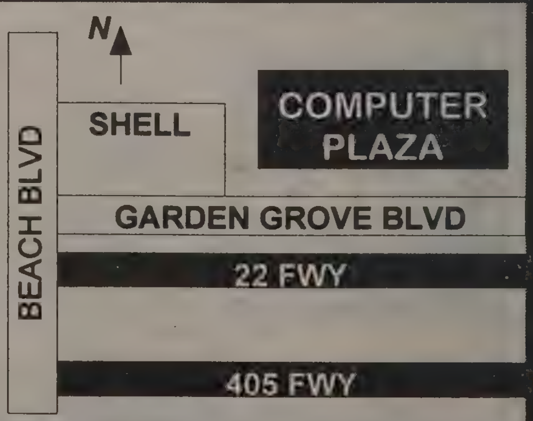


That's Entertainment

Personal Computers Getting Into Showbiz

By Douglas J. Nakakihara

During the same week in June in the LA area, three major trade shows, Digital World, InfoComm, and ShowBiz Expo, gave a compelling demonstration of the ways personal computers are creating or delivering some form of entertainment.

If you look back at, say, the Commodore 64, you'd see that desktop computing began with a high concentration of entertainment software. As PCs and Macs slowly took hold, number crunching, word processing, and other productivity applications dominated the market. Today we've come full circle—soundboards, GUIs, color monitors, CD-ROMs, etc. are becoming standard PC peripherals. Entertainment-related applications are no longer taking a back seat.

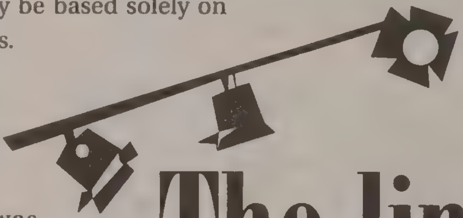
Computers are dramatically affecting time-tested crafts and techniques used to create various forms of entertainment, and also opening new avenues in which creative people can apply their talent. Major recording artists are developing interactive CD-ROM titles. Desktop PCs are being used for special effects in the production of broadcast television shows and major motion pictures. PCs are also being used to produce music videos, where all of the editing is done in a totally digital environment.

Computers are also being used to create effects that would have been impossible with earlier technology. The Simi Valley-based Dreamquest, an exhibitor at ShowBiz Expo, worked on *The Crow,* doing such things as pasting Brandon Lee's head on another actor's body!

Computer art, though still in its infancy, is finding acceptance as an art unto itself rather than an imitation of traditional art forms. Just as my daughter will probably never

own a record, a generation of artists is coming that's never used pen and paper or brush and canvas.

From editing video on desktop PCs, watching the latest hit motion picture in a window on your computer, to running interactive CD-ROM titles, computers are directly affecting the way we are being entertained. The exciting (or scary) thing about this is the speed at which the technology is progressing and prices are decreasing. The line between professionals and amateurs continues to blur; ultimately, the distinction may be based solely on talent rather than tools.



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Video Editing

A common theme to all three shows was nonlinear editing. Using digitally stored video, you can piece together a production by constructing a play-order for some or all of the frames. Since the data is stored on a computer hard disk, there is immediate random access to any piece of video. You can create the production in any order you wish, plus you can go back and change things at will. In contrast, videotapes must be edited in the order you want the scenes shown. You don't have the luxury of random access.

Editing videotape is complex and something better left to the experts. Nonlinear editing is more intuitive, which makes it easier to produce the final product. Although you must still rely on tape as a capture and distribution medium, efforts are now being made to allow video to be captured directly into digital format.

The concept of nonlinear editing is not new. In a certain sense, we are only regaining what used to be the norm. Before video came around, everything was nonlinear because it was based on film. When someone puts a movie together, they simply splice it together using raw film footage. If something is too long, they just cut that portion of the film out. If it is too short, they can splice in additional footage.

Tools For Everybody

Everywhere you looked, someone was demonstrating their latest Mac, Windows, or Amiga-based nonlinear editor—24-bit (or close to) color, with storage requirements of around six to eight minutes per gigabyte for good quality output. Most products allowed you to record longer amounts of video, sacrificing display quality, and nearly all used some form of motion JPEG compression.

Mac-based digital video products had extremely high-end capabilities, with a price to match. However, some of the videos I saw created with Radius products were incredible. Aside from the accomplishment of doing it on a desktop computer, the digital imagery and audio were beautiful.

Windows-based nonlinear editors covered a wider spectrum of affordability. There were pro-sumer-level products in the $10,000 to $15,000 range, as well as some at $100,000 and up.

Many of these nonlinear editors did not do real-time effects. For example, if one scene is supposed to dissolve into another, the computer had to "render" the dissolve, essentially creating a new set of frames that show the dissolve. If scenes are rearranged or the effect is changed, the transition has to be rerendered.

On the low end of the price spectrum were the Fast Video Machine (1-800-248-FAST) and the NewTek Video Flyer (913/354-1146). The Fast representative demoed their extremely impressive upcoming Windows-based nonlinear product. NewTek's Amiga-based VideoToaster Flyer was equally impressive. Both of these products will do transition effects in real time.

The Flyer has a definite edge in terms of features and performance. However, with the Amiga's uncertain future, the Fast Video Machine is looking better and better. In any event, for those home video people out there waiting to become the next Steven Spielberg, affordable nonlinear editing is just around the corner.

You'll need multiple gigabytes of storage space for whichever nonlinear editing system you choose. Nicely satisfying that need is a new drive from Micropolis (1-800-395-3748); the model 1991 can store 9.1GB of data. It's a 5.25" full-height SCSI drive. Micropolis was projecting a street price around $4500—that's only 50 cents a meg!

Pinnacle Micro (1-800-553-7070) was showing Orray, an innovative storage system designed around an array of four optical disk drives, providing 5.2GB of storage. This product overcomes the inherent sub-hard disk performance of the magneto-optical medium. A set of the removable disks only costs about $800; the system lists for $14,995.

Sigma Designs (510/770-0100) has an impressive MPEG board for the PC called ReelMagic ($449). The board allows playback of MPEG video at 30 frames per second, although color is limited to 15 bits (32,768 colors). It supports the Philips DigitalVideo disks and the upcoming VideoCD formats. The potential for this product with interactive CDs is very exciting. They have also licensed their technology to Radius for a Mac version.

TVs On Steroids

Whether it's a broadcast TV, a videotape, a laserdisc, interactive CD, or cartridge game, when it all comes down to it, TV is the medium of choice for entertainment. It generally represents the least expensive way to distribute information to masses of people. Does anyone think people are really going to gather around their computer terminals to watch a movie?

Computer monitors and TVs, once distant cousins, are becoming increasingly better acquainted. Adapters are being made to display video signals on computer monitors and to display computer output on TVs. Although computer monitor capabilities have long surpassed NTSC video's 15.75kHz horizontal scanning frequency, the growing computer-based video editing market has created a need for computer

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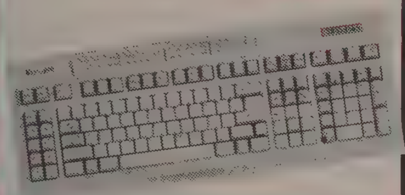

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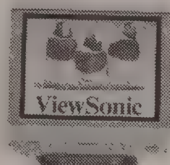

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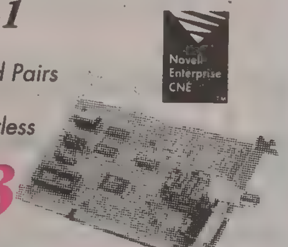

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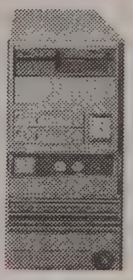

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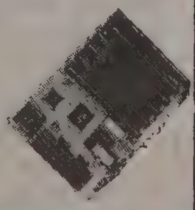

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- 30 Pin Memory

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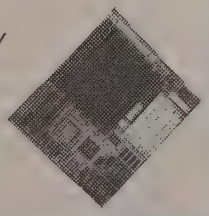

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- 3 VLB

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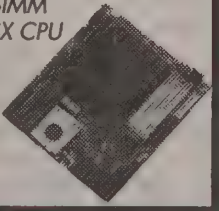

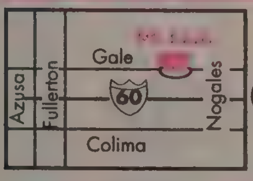

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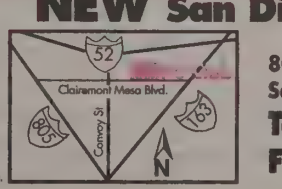

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That's Entertainment *continued*

monitors that can also natively display NTSC (and PAL) video.

Manufacturers seem to be cognizant of this need and are releasing more multi-personality monitors. For example, Mitsubishi's new 42" computer monitor supports NTSC, PAL, SECAM, and S-Video, plus PC and Mac displays. Resolution only goes to 800 x 768, however. This baby will only set you back $13,000, so start clearing a (huge) spot for it on your desk.

A major focus of InfoComm was display technology. Virtually every type of display technology imaginable was there, like CRTs, LCD screens, monitor walls, and projection systems. The "Video Projection Shoot-Out" was a huge room filled with over sixty of the projection-type devices from various manufacturers. These were set up side by side, so attendees could compare performance.

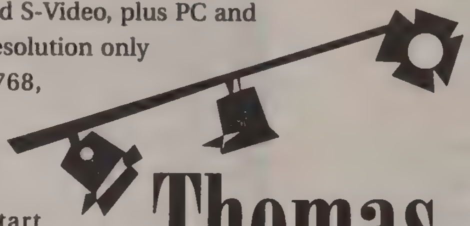
Another area called "War of the Walls" featured the latest in video walls—integrated sets of individual monitors that work in unison. They also had sections displaying HDTV sets, rear-projection TVs, as well as standard CRT monitors.

The need to get computers to talk with the ocean of display devices has created a demand for specialized multifunctional interfaces. Extron Electronics (310/802-8804) is a leader in this field and manufactures computer-video interfaces, switchers, distribution amps, scan converters, etc. Extron's equipment was used to distribute the signals to all of the products in the Shoot-Out.

Anyone remember the 3DBB (three-dimensional blackboard) in the old Tennessee Tuxedo cartoon? Well, VRex (914/345-8877) has come close to bringing a 3DBB to the PC market. First you need a pair of specially polarized glasses. Then using a proprietary display product called VR-1000, virtually any display device becomes three-dimensional! Boy, when the game developers get a hold of this, look out!

Interface

Though not really much in the way of entertainment, I have to mention GyroPoint from Gyration (408/973-7078), a very cool remote pointing device for PCs, Macs, and SGI and Sun workstations. It uses gyro-



Thomas Dolby spoke at Digital World and stressed the importance of getting young artists involved in developing products.

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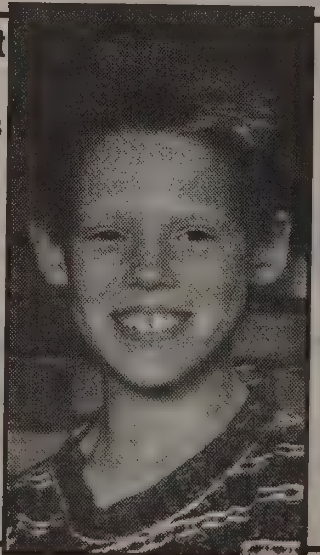

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That's Entertainment *continued*

scopes to sense the motion of a person's hand. The gyroscope mechanism provides mid-air resistance, making it easy to precisely move the mouse pointer. It was many times easier to use than an infrared-based remote device I tried. Plus you don't have to point it directly at any type of receiver unit.

Another neat computer input device was SoftBoard by Microfield Graphics (503/626-9393). It looks basically like a large whiteboard. Using special dry markers, you can write on the board and have it simultaneously appear on a PC or Mac monitor. Laserbeams are used to triangulate the marker's location. Bar codes are built into the markers near the tip which tell the computer what color is being used. Also featured is real-time remote transmission using a modem and ordinary telephone lines.

Titles And Tools

So many interactive CD products are just plain boring. Too many developers are more excited about technical achievements than the basic entertainment value of the finished product, yet the latter is really what's important for financial success.

Some big-name musicians are now taking the desktop PC market seriously. Real creative forces, these innovators should have a big hand in shaping the future of multimedia.

Thomas Dolby's company, Headspace, has developed something they call AVRe (Audio Virtual Reality Engine). This product overcomes a basic problem with essentially all CD titles: the music track is not dynamic. AVRe changes the music to fit the mood of the video. Very cool. Dolby spoke at Digital World and stressed the importance of getting young artists involved in developing products. His message: Kids don't want to get a guitar and join a band anymore, they want a computer.

Peter Gabriel also spoke at Digital World and showed off his CD, XPlora 1—Peter Gabriel's Secret World. The one formerly known as Prince and David Bowie also have interactive CDs, which were demonstrated at the show.

An upcoming interactive CD game called Loadstar was very exciting. The production of this title brought together Hollywood moviemaking techniques and software game design. Real actors were used too. The SegaCD version was pretty good, but I can't wait to see a 3DO version. Lots of space ships and fighting! ■

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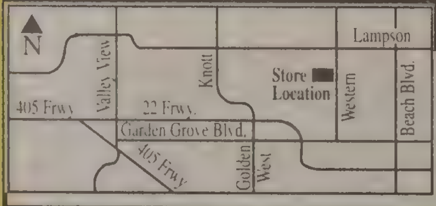

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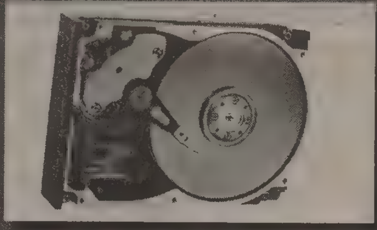

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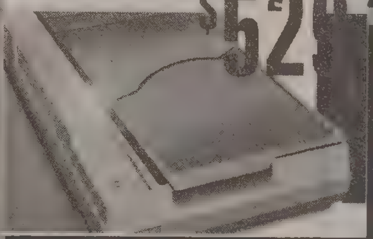

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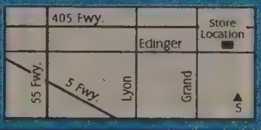

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- Intel486™ DX2 or Pentium™ CPU
- Ultra-Fast **256K** WB Cache; Up to 512K
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- One Floppy Drive (3.5" or 5.25")
- PCI Fast SCSI-2 Hard Disk Controller
- PCI **Diamond Stealth 64 (2MB DRAM)** Accelerator (The best accelerator for both DOS & Windows)
- **15" Non-Interlaced .28mm 1024x768 Monitor** (36% larger edge-to-edge display)
- 2 Serial, 1 Parallel & 1 Game Ports
- Enhanced 101-key Keyboard
- Hi-Resolution 400 DPI Serial Mouse
- EPA Energy Star Compliant

486/66 DX2	**$2145**
PENTIUM/60	**$2195**
PENTIUM/66	**$2495**
PENTIUM/90	**$2845**

- 2X CD-ROM, Stereo 16 Card & Speakers Add $230
- **1080MB / 2100MB** SCSI-2 Drive Add $360 / $950
- 14400 Baud FaxModem with Software Add $100

PCI Best Buy

- Intel486™ DX2 or Pentium™ CPU
- Ultra-Fast **256K** Write-Back Cache SRAM
- **8MB** RAM & Expandable to 128MB
- **540MB** 10ms **PCI Enhanced IDE** Hard Drive
- One Floppy Drive (3.5" or 5.25")
- PCI Local Bus **IDE** Hard Disk Controller
- PCI **Diamond SpeedStar (1MB DRAM)** Accelerator (The best accelerator for both DOS & Windows)
- **15" Non-Interlaced .28mm Flat Screen Monitor (36% larger edge to edge display)**
- 2 Serial, 1 Parallel & 1 Game Ports
- Enhanced 101-key Keyboard
- Hi-Resolution 400 DPI Serial Mouse
- EPA Energy Star Compliant

486/66 DX2	**$1675**
PENTIUM/60	**$1945**
PENTIUM/66	**$2045**
PENTIUM/90	**$2375**

- **540MB / 730MB / 840MB** Drive Add $80 / $180 / $220
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- 14400 Baud FaxModem with Software Add $100

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Best Windows Workstation
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Dream Machine
Best Buy 1993

PC World Best Buy
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VLB Best Buy
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Professional 66
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Computer Shopper Top 10
Comtrade Dream Machine
July, 1993

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California Resellers:

Take advantage of this free editorial listing!

Plan now to make the most of your peak selling season with the 1994 MicroTimes 6th Annual Buyers Guide!

By making sure you're listed in this year-round resource you will:

- Bring customers into your store during your most important selling season and throughout the following year. They'll see your message next to an exciting lineup of editorial features, including our own writers' picks for the best hardware and software products of 1994 and over thirty pages of Buyers Guide announcing new products and special offers—many of which you'll already have in stock, ready to sell!

- Showcase your store, products, and services by telling your potential customers about the unique service your business offers, your in-house experts, and the guidance they provide in such areas as LANs, multimedia, accounting, and other specialties.

- Benefit from our own special promotions of this exciting issue which will appear in October and November. MicroTimes will help you build the consumer excitement you need to ring up sales as you ring in the new year.

Special Vendor Authorized Listings! In addition to listing your store's name and other information alphabetically by geographical area, we also offer an additional feature to enable your prospective customers to find you quickly: **a separate directory of vendor-authorized sales, service, training, and support providers**. So if you're authorized to provide these services for Novell, IBM, Apple, Sun, Hewlett-Packard, or other name-brand products, please give us that information so we can include your name in the vendor-authorized listings.

To make sure you're part of this important resource, complete and sign the attached reseller poll form and mail or fax it back to us by Sept. 30, 1994. **If your store has more than one location, please use a separate form for each location** to generate the sales that will make your fourth quarter a success. Don't let this opportunity pass you by!

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MICROTIMES 1994

6th Annual Buyers Guide Reseller Poll

Mail to: Reseller Poll, 3470 Buskirk Ave., Pleasant Hill, CA 94523
Fax: (510)934-7351
Deadline: September 30, 1994

Store Name: ____________________

Store Manager: ____________________

Address: ____________________

City: ____________________ **State:** ______ **ZIP:** ________

Phone: ________________ **Fax:** ________________

What does your business specialize in, and who are your in-house experts for each specialty? (e.g., multimedia, hardware, software, components, service)
List up to three:

Specialty	Expert

What software operating systems does your business support?

MS-DOS☐ Windows☐ UNIX (specify variety)___ O S / 2☐ Macintosh☐ Other (specify)____

What is your multimedia specialty?

CD Titles☐ Video☐ Desktop Publishing☐ Production☐ Hardware☐ Software☐ Software Development☐

List the three top-selling brands sold at your store in 1994:

____

What special value-added services (e.g., service, training, support, warranties, return policy, etc.) does your business offer? (Please keep responses under 25 words or we will edit them to fit available space.)

____
____
____

Are you a vendor-authorized sales, service, training, and/or support source?
If so, please list up to five vendors (e.g., Sun, Novell, Hewlett-Packard, Compaq) who have authorized your business to provide these services, and check the areas for which you're authorized.

Vendor	Sales	Service	Training	Support

I certify that all the statements made in this survey are true.

Name: ________________ **Signature:** ________________

Title: ________________ **Date:** ________________

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- 2S/1P/1G Ports
- Fast 32 Bit VESA VGA W32i
- 14" .28dp SVGA
- Mini Tower Case
- 101 KB Enhanced Keyboard
- Hi Resolution Mouse 800dpi

	Regular	CASH
Pentium 60MHz	$1650	$1599
Pentium 66MHz	$1725	$1669
Pentium 90MHz	$2325	$2269

PCI SYSTEM

- 486MB INTEL Processor
- 256K Cache
- Fast 4MB RAM 70ns
- PCI IDE I/O
- 420MB HDD
- 1.44MB FDD
- 2S/1P/1G Ports
- PCI VGA W32p
- 14" .28dp SVGA
- Mini Tower Case
- 101KB Enhanced Keyboard
- Hi Resolution Mouse 800dpi

	Regular	CASH
486DX/33MHz	$1350	$1290
486DX2/50MHz	$1390	$1320
486DX2/66MHz	$1450	$1380
486DX4/100MHz	$1750	$1680

GREEN VLB SYSTEM

- 486DX INTEL Processor
- 256K Cache Upgrade to 512K
- Fast 8MB RAM 70ns
- Fast 32 Bit VESA IDE I/O
- 420MB HDD
- 1.44MB FDD
- 2S/1P/1G Ports
- 32 Bit VESA VGA Trident Windows Accelerator
- 14" .28dp SVGA
- Mini Tower Case
- 101KB Enhanced Keyboard
- Hi Resolution Mouse 800dpi

	Regular	CASH
486SX/33MHz	$1100	$1033
486DX/33MHz	$1220	$1153
486DX/50MHz	$1240	$1173
486DX2/66MHz	$1269	$1199
486DX4/100MHz	$1569	$1499

VLB SYSTEM

- 486DX INTEL Processor
- 256K Cache
- Fast 4MB RAM 70ns
- Fast 32 Bit VESA IDE I/O
- 270MB HDD
- 1.44MB FDD
- 2S/1P/1G Ports
- 32 Bit VESA VGA Trident Windows Accelerator
- 14" .28dp SVGA
- Mini Tower Case
- 101KB Enhanced Keyboard
- Hi Resolution Mouse 800dpi

	Regular	CASH
486SX/33MHz	$895	$835
486DX/33MHz	$1050	$970
486DX2/50MHz	$1110	$1030
486DX2/66MHz	$1130	$1050

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PCI ET 4000 W32P 1MB	$140
VLB Trident 9400CX 1MB	$65

MONITORS

Mono VGA 14"	$95
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14" VGA .28dp Edge to Edge 1024x768.	$205
14" VGA .28dp N-I Edge to Edge 1024x768.	$225
MAG DX151 Green SVGA	$423
MAG DX171 Green SVGA	$745

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1.2GB SCSI	$1250

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Adaptec 1542 BK w/Kit	$250
Adaptec 2742 BK w/Kit EISA SCSI	$365
Promise VLB Cache Exp. to 16MB	$130
VESA IDE 2S/1P/1G.	$18
PCI IDE	$22

OTHER

Microsoft Mouse	$28
Colorado Tape Backup 250 Int.	$150
Conner Tape Backup 250 Int.	$150
96/24 Send/Receive Fax Modem	$30
14.4 Send/Receive Fax Modem	$85

MULTIMEDIA

CD ROM

NEC 510 SCSI 3x	$375
Goldstar 2x w/Controller	$140
Panasonic 2x w/Controller	$149

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Sound Blaster Basic 16bit	$99
Spectrum Pro Audio 16 SCSI	$95
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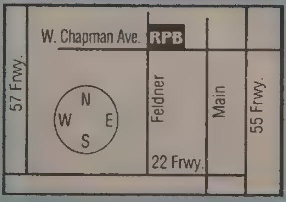

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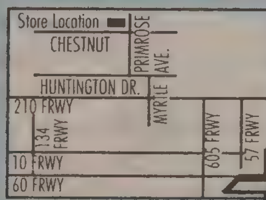


Product Spotlight

UPDATES

• **CE Software has lowered the price for registered users of QuicKeys to upgrade to v3.0.** It is now $39.95 to upgrade from any version. CE Software, 1801 Industrial Cir., P.O. Box 65580, West Des Moines, IA 50265. 1-800-523-7638.

• **Fractal Design** announced a **bundle consisting of Fractal Design Dabbler**, the new introductory natural-media paint application, **and Kurta Corp.'s new PenMouse tablet**. The package is available through December 31, 1994, for $249, a savings of $99. Fractal Design Corp., 335 Spreckels Dr., Aptos, CA 95003. (408)688-5300.

• **Genoa Systems** has **reduced the price** on its **VideoBlitz II** and **Phantom 32i** true color graphics accelerators. The VideoBlitz II is now $539 for the 2MB PCI version, and the Phantom 32i is now $299. Genoa Systems Corp., 75 E. Trimble Rd., San Jose, CA 95131. (408)432-9090.

• **Knowledge Revolution** announced an upgrade of **Working Model**, its mechanical simulation and analysis software for engineers, to **v2.0**. Available for Windows and Mac, it has a suggested retail price of $1495. Knowledge Revolution, Inc., 66 Bovet Rd., Suite 200, San Mateo, CA 94402. 1-800-766-6615.

• **MERGENT International** announced the release of several feature-rich **upgrades** to its product family to provide a more fully integrated product line, a **reduction in pricing**, and the use of recycled materials and soy inks in its packaging. MERGENT International, Inc., 70 Inwood Rd., Rocky Hill, CT 06067. (203)257-4223.

• **MicroFrontier** released **v3.0** of **Color It!**, the paint and image editing program for the Mac. It is available for $149.95. MicroFrontier, Inc., P.O. Box 71190, Des Moines, IA 50325. 1-800-388-8109.

• **MicroHelp** upgraded **Uninstaller**, its utility for removing Windows applications, directories, subdirectories, and auxiliary files, to **v2**. Upgrades from v1 are $29, otherwise the suggested retail price is $69.95. MicroHelp, Inc., 4359 Shallowford Industrial Pkwy., Marietta, GA 30066. (404)516-0899.

• **Objects, Inc.** released a new version of its object-oriented desktop programming system. **Layout 3.03** for DOS is being distributed free of charge to all registered users of Layout 3.02 or is available for $299.95. Objects, Inc., NorthWoods Business Park, 99 Rosewood Dr., Danvers, MA 01923. 1-800-424-6644.

• **ParcPlace** introduced **VisualWorks v2.0**, a major new release of its object-oriented client and server tool for building portable applications. It is priced at $2995 for Windows, Windows NT, Mac, and OS/2 and $4995 for UNIX-based systems. ParcPlace Systems, Inc., 999 E. Arques Ave., Sunnyvale, CA 94086-4593. (408)481-9090.

• **PrairieSoft** released **DiskTop v4.5**, an upgrade to the file management program previously produced by CE Software. It is available for $30 to registered DiskTop users. PrairieSoft, Inc., P.O. Box 65820, West Des Moines, IA 50265. (515)225-3720.

• **Specular International** shipped **LogoMotion v1.5**, an upgrade to its instant 3-D flying logo animator, which is now optimized for the PowerMac. Registered users of v1.0 can get v1.5 for $39, otherwise the price is $149. Specular International, 479 West St., Amherst, MA 01002. (413)253-3100.

• **VIEW Software** has upgraded **Long File Names for Windows** to **v2.0**. The new version supports its feature set with Word, Excel, PowerPoint, Access, Mail, Publisher, and Visual Basic and is available for $29.95. VIEW Software, Inc., 916 Commercial St., Palo Alto, CA 94303. 1-800-487-8439, (415)856-VIEW.

• **VREAM** released **VRCreator v2 for Windows**, the latest version of its virtual reality development system. The software is available for $495, and an unlimited distribution license costs $295. VREAM, Inc., 2568 N. Clark St., #250, Chicago, IL 60614. (312)477-0425.

New Products

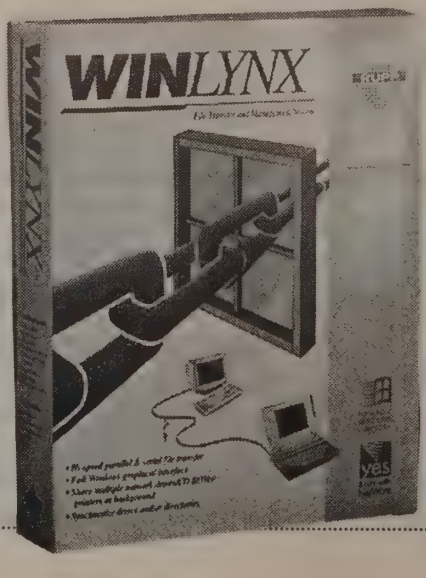
PC Software

Buy-Out Plan v6

Buy-Out Plan is designed to help merger and acquisition professionals develop a feasibility study, produce a financing plan, and prepare a professionally written proposal for a business acquisition. It consists of two main components: an Analysis Section and a Report Writer Section. The Analysis Section walks the user through the evaluation and planning process by analyzing the historic performance of the target company and then addressing a variety of finance and deal-structure related issues, such as valuing and pricing the acquisition candidate, financing the purchase, projecting results, and measuring short- and long-term return on investment. The Report Writer assembles the information gathered in the Analysis Section into an easy-to-read narrative format that can be edited in any popular word processor. ($395 through December 31, 1994, $595 thereafter) MoneySoft, Inc., One East Camelback Rd., Suite 550, Phoenix, AZ 85012. (602)266-7710.

Rupp Technology WinLynx

WinLynx is a next-generation PC-to-PC file transfer utility that allows users to move and manage files between connected personal computers while remaining in the Windows graphical user interface. It includes extensive drive and directory synchronization options, advanced resource sharing, and background file transfers at data transfer speeds boosted by Rupp's proprietary 18-wire parallel cable. WinLynx comes with WX Sync, a feature that permits complete synchronization of selected data so that two connected computers will end up with identical, time-stamped files or complete drives; and RUPPnet, a set of advanced resource sharing features that allows complete and easy access to any and all peripherals connected to linked computer systems. ($169.95) Rupp Technology Corp., 3228 E. Indian School Rd., Phoenix, AZ 85018. (602)224-9922.



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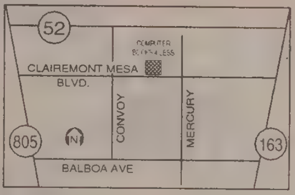

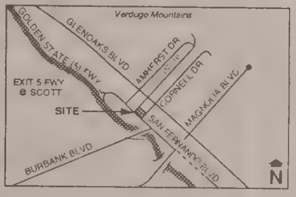

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Contact AnnMarie Santoro at **800-573-FAIR** for more information and booth reservations. For a copy of the Marketplace floorplan and reservation form, call **619-573-0094** and request documents 109 and 110.

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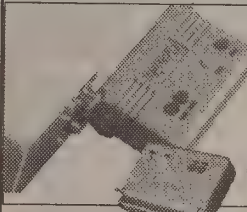

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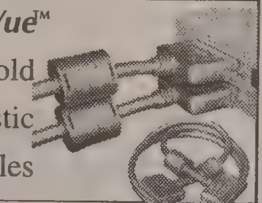

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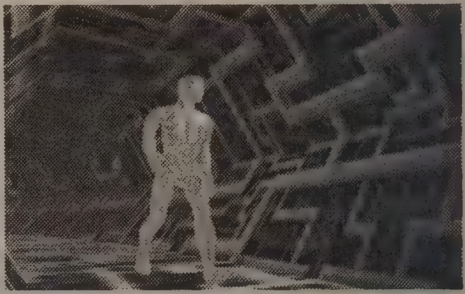
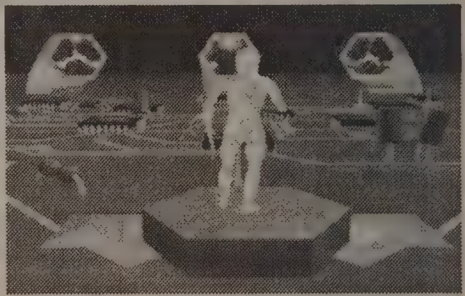
Lawnmower Man

List Price: $49.99
Published By: Sales Curve Interactive
For: IBM 386, 2MB RAM, CD-ROM @ 150k/s, VGA/SVGA, Sound Blaster
Reviewed By: Fred Haslam

If Dragons Lair had an evil twin brother, it would be named Lawnmower Man. This game is strictly timing and reactions set within poorly digitized animation sequences. Don't be fooled by the marvelous screen shots on the box or within the rules. All the screen shots come from the *movie!* On the back of the box it says "32 color game"; do not confuse this with 32-bit color.





The game starts where the movie *Lawnmower Man* ends. The doctor enters the VR realm in an attempt to defeat the now omnipotent Lawnmower Man. A woman's voice will tell you what to do as you zoom down corridors and dodge digitized traps.

The interface makes sense. The arrow keys are used for moving around, but like Dragons Lair, you are dead if you hit the wrong key. The graphics are high density with 256 colors, but only use thirty-two and look like monochrome. The animation is good, but that doesn't excuse the poor artwork. The music is average, closely synced to the animation. The only good point to the sound is the digitized voice telling you which key to press.

Lawnmower Man is a reflex game. You might waste an afternoon on it but it will soon be shelved, never to be seen again.

P.S. The company promises an upgrade to a 256-color version *if* you send them your CD. (Sales Curve

Continued on page 99

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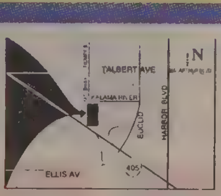

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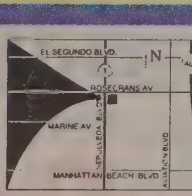

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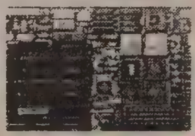

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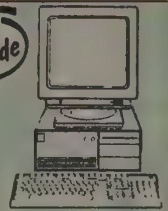

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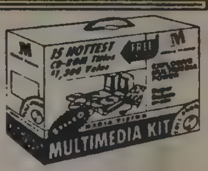

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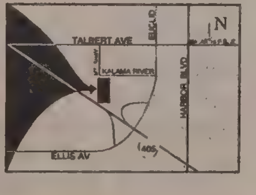

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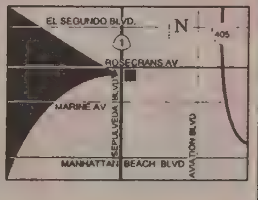

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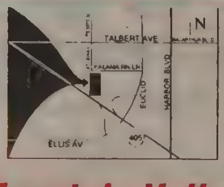

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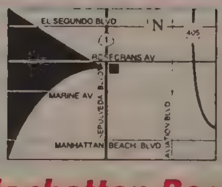

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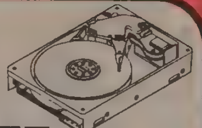

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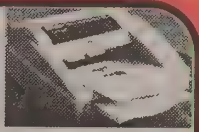

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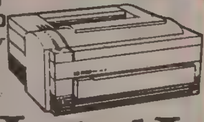

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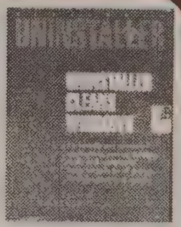

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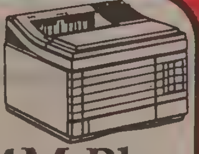

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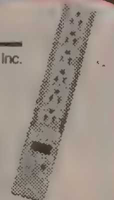

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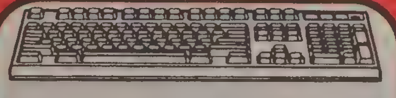

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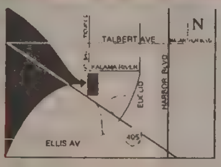

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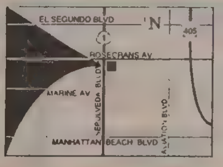

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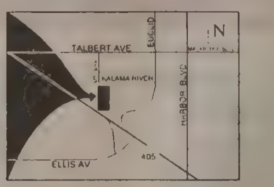

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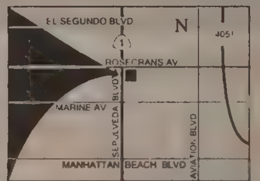

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Continued from page 92

Interactive, 330 Washington Blvd., Suite 700, Marina Del Rey, CA 90292-9859. 310/577-1515)

Megarace

List Price: $49.99
Produced By: Cryo Interface
Published By: The Software Toolworks, Inc.
For: IBM 386, MS-DOS 5.0, 2MB RAM, MCGA/VGA, mouse required, Sound Blaster/Adlib/Pro-Audium, CD-ROM @ 150k/s
Reviewed By: Fred Haslam

Megarace is fifteen minutes of game set within hours of eye-blasting graphics. The game itself is extremely simple—move left, move right, shoot. The backdrops are gorgeous, three-dimensional, animated fantasy sequences. The creators put a lot of time and energy into making this game beautiful.

This race game is set in the future. You are operating a race car within a "Virtual Reality" game show. A smarmy host named Lance Boil guides you from race to race, describing both settings and opponents. The settings are amazing. One track circles through an underwater city, another loop-de-loops on a low-gravity asteroid, and yet a third claims to be set inside a giant whale.

The graphics can only be described as incredible. The animation utilizes CD technology to the fullest. The music is movie quality. Both music and sound are closely sequenced with the graphics. The interface is almost intuitive, you will need to examine the help cards to figure out which keys to use.

As a racing game, Megarace could be better called Microrace. Play this game with a friend. That way, your friend can operate the controls while you bask in the graphics. (The Software Toolworks, Inc., 60 Leveroni Ct., Novato, CA 94949. 415/883-5157) ■

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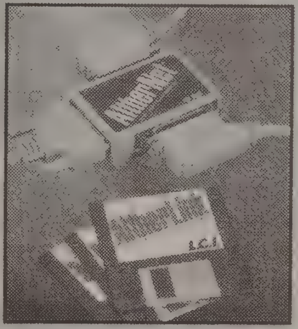

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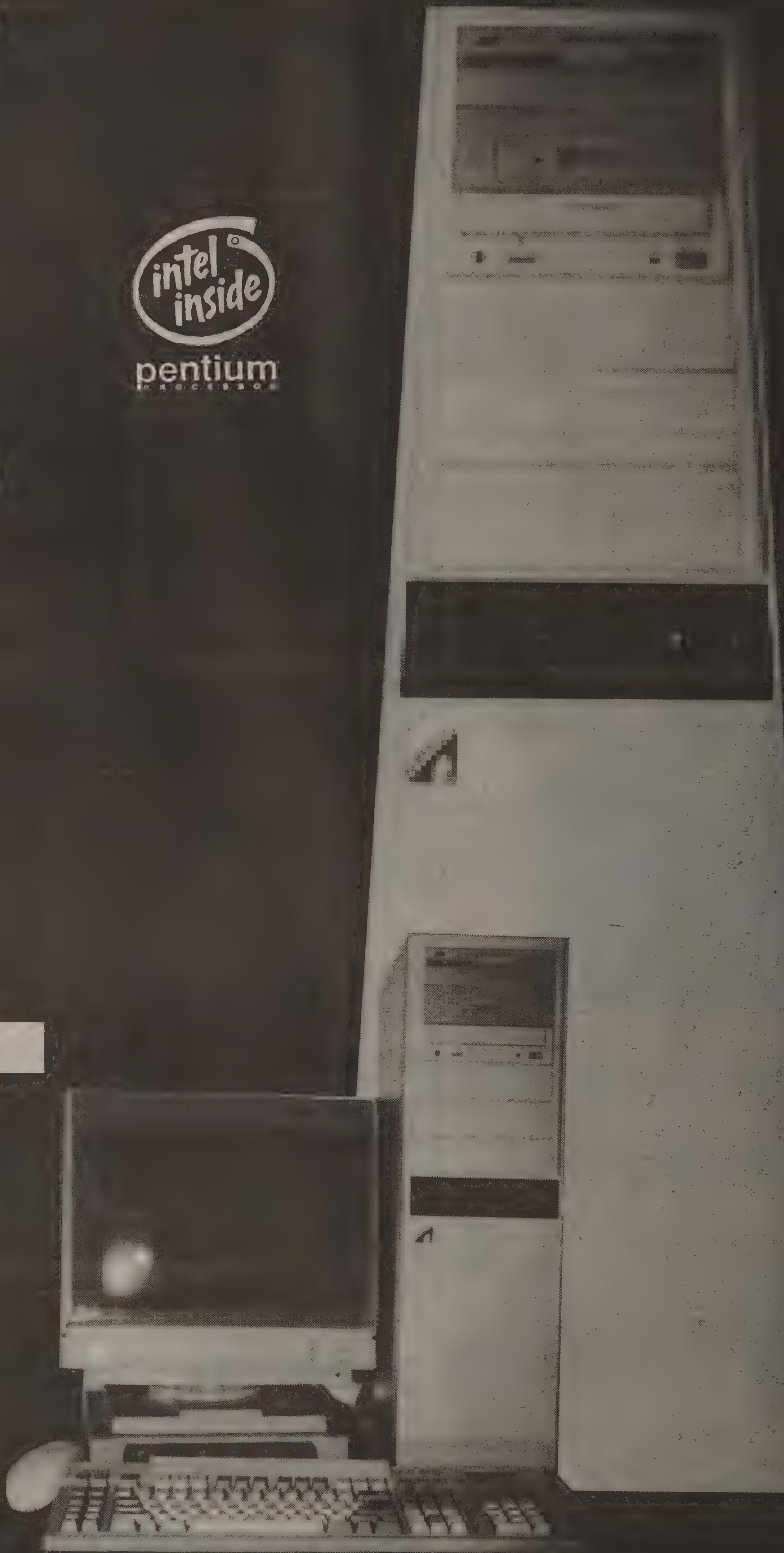

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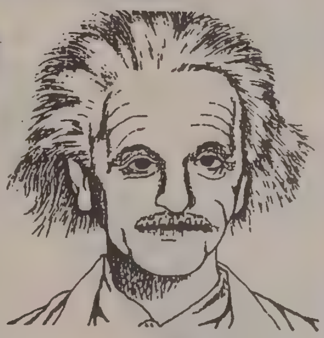

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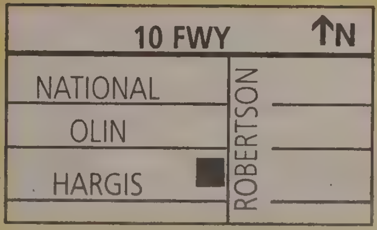

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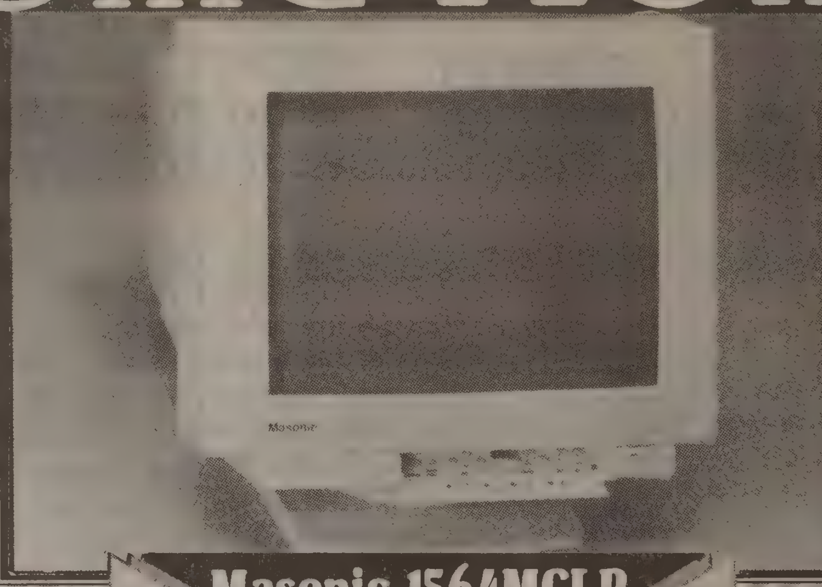

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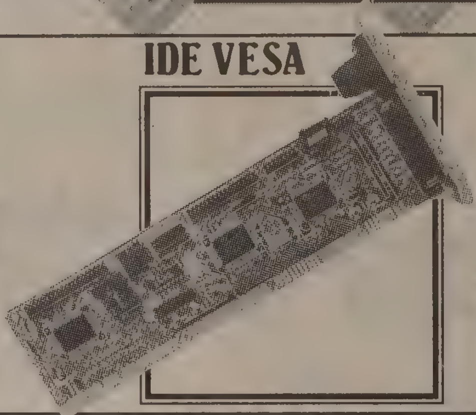

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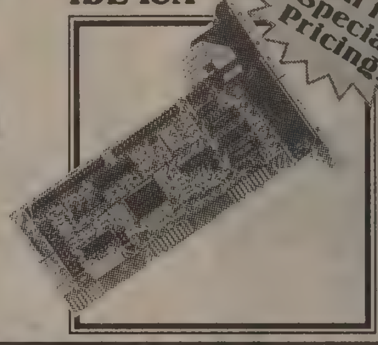

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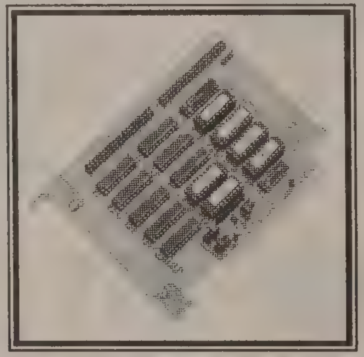

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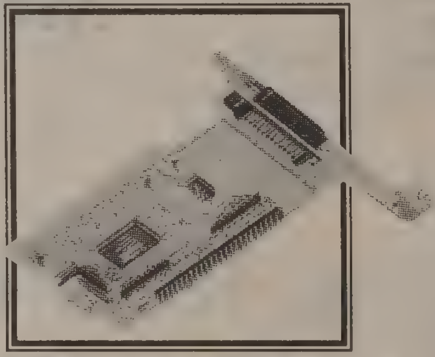

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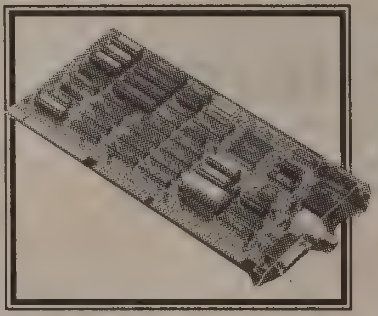

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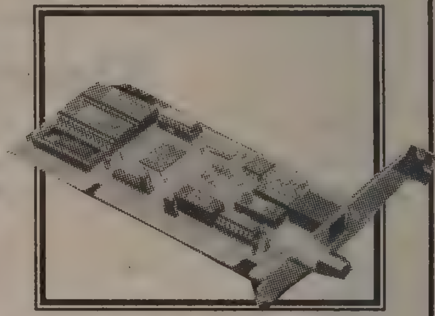

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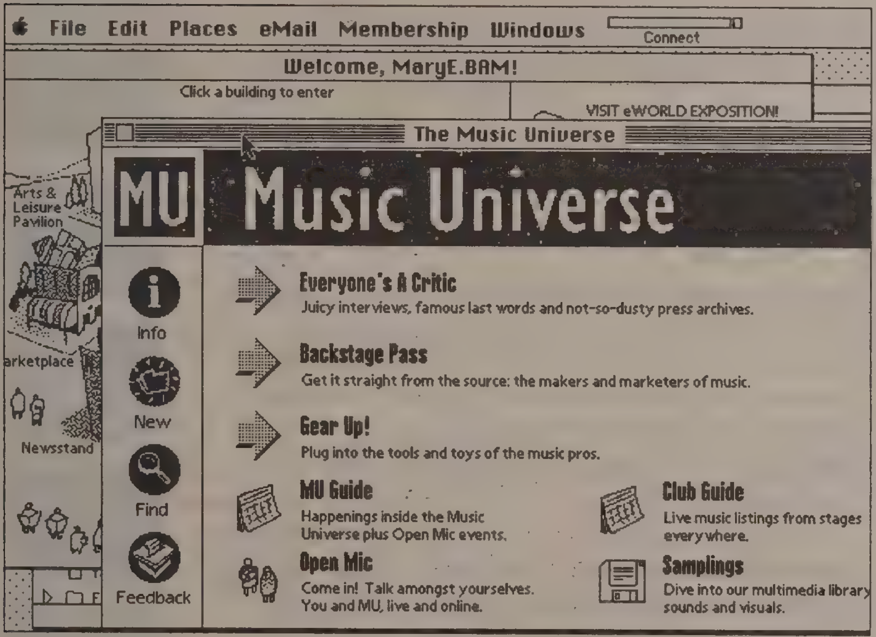
BAM Enters Music Universe

Our parent company, BAM Media, has launched its first online venture, the Music Universe, on Apple's new eWorld service. Designed to bring together music journalists, fans, musicians, and industry professionals, MU combines the strengths of print publications and interactive media, with articles, events listings, chat rooms, discussion boards, and software libraries.



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Come in! Talk amongst yourselves. You and MU, live and online.

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Dive into our multimedia library sounds and visuals.

Says *BAM* Publisher Earl Adkins, "The Music Universe is in many ways a much bigger undertaking than *BAM*. *BAM* has a niche as a regional music/lifestyle publication; it serves the local market in Northern and Southern California. The Music Universe, by its very nature, is broader, knows no geographic boundaries. And as such, it's much wider in scope editorially. There's much more we can do with it.

"One of our primary goals is to make sure the service becomes the primary source for industry information and networking."

WHAT'S NEW IN MU

Lorry Fleming, former *BAM* columnist and MU managing editor, explains, "We're trying to create a community for people that work in the music industry, and that's really quite different from what's out on the other services. We're focusing on industry people just as much as we're focusing on fans."

The content areas of Music Universe (hosted by *BAM* editor Steve Stolder, industry veteran Bonnie Simmons, and *BAM* pro audio columnist Ed Tywoniak respectively) are focused on the music press ("Everyone's A Critic"), the music industry ("Backstage Pass"), and pro audio equipment ("Gear Up!"). Each area features a discussion board where the locals can argue the relative merits of their favorite groups, garage bands can get the lowdown on finding a manager and a record deal, and the pros can exchange tech tips. Within each area's software library you'll find everything from GIFs of your favorite artists to MIDI files; additionally, there's information on products from upcoming CDs and videos to musical instruments, and articles and local entertainment listings from around the country.

INTERACTIVE PUBLICATION

For Stolder, who hosts the Music Press area and thinks up diabolically obscure trivia questions, eWorld's interactivity and instant information come as a pleasant surprise: "With hard copy, it's harder to take people's feedback and shape it into something. With this it's much more instantaneous. With a magazine, you get feedback, and you try to translate it and put it into another form. With this, you take feedback and it's part of the form.

"It's a lot more of a give and take. It's not, 'We're telling you a story and giving you our opinion on music—sit back and hear us out.' This is more. We're prompting response by offering opinions and by chronicling what's going on, but at the same time the reader responds much more easily and much quicker."

Adds Adkins, "One of the interesting things online services offer is that they are always publishing. Unlike the print medium, where we have a periodic publishing frequency and a very short shelf life, the online service has a much longer potential shelf life, so it has a greater value as a resource. It's like an archive of information. In some ways it's going to be a more helpful service." ■

BY MARY EISENHART

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Desktop VR

Under The Hood

Cyberscope 3D Takes An Unusual Approach

Desktop virtual reality is getting easier and easier, with more software programs and viewing systems to choose from, but it still falls far short of full immersion, where you can move your whole body with the illusion of inhabiting a different, simulated space.

Cyberscope from Simsalabim Systems ("Simsalabim" is a magician's oath like "abracadabra" or "hocus pocus.") is a deceptively simple stereoscopic system for viewing 3-D imagery on the desktop. Before the advent of VR, it would have been enough to describe it just in terms of 3-D, but it does in fact offer an exceptionally sharp and clear sensation of depth, exceeding that of many other VR-oriented programs.

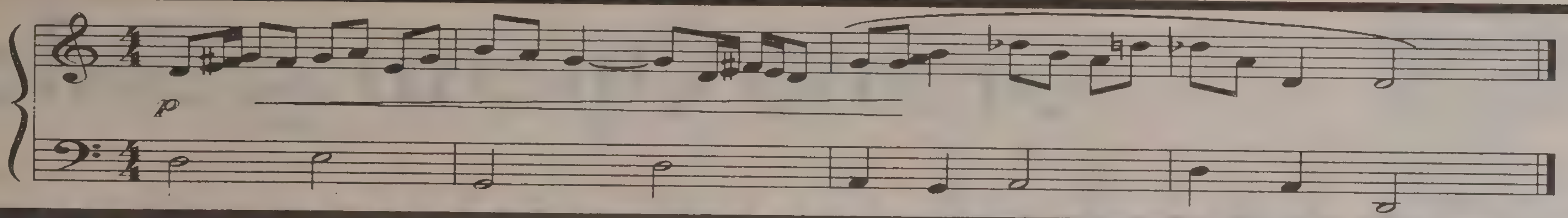
Instead of wearing a head-mounted display or looking at a monitor through 3-D glasses, you install the Cyberscope viewing hood on your monitor. The hood is available in black or white plastic, and the $199 package comes with either DOS or Mac demos. Two mirrors split and rotate the two halves of the display picture 90 degrees into left and right images, resulting in a composite image wider than it is tall.

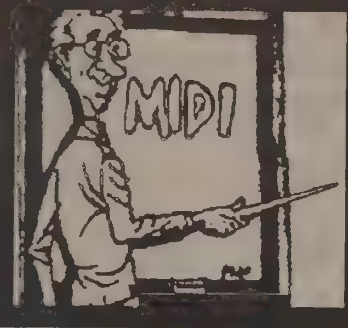
Because of the 90-degree twist, aligning the Cyberscope is counterintuitive. Sliding it sideways will cause the two images to move up and down, and sliding it up and down will cause the two images to move sideways.

It's up to the software to supply the stereoscopic information. CyberSmash, a wonderful 3-D color version of Breakout, is included as a demo, as is the 3D Slide Show for the Cyberscope.

Even though the Cyberscope may be a bit awkward at first, it really does isolate you from the room environment, making the 3-D experience much more intense. Even with advanced electronically shuttered glasses like those from StereoGraphics, you see the monitor image surrounded by all the interference of the room. Because the Cyberscope is so much an immersive direct-path interface, the image is sharper, the colors deeper and more pure than the mediated and transmitted signals seen through an HMD.

BY TONY REVEAUX





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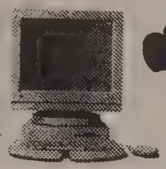

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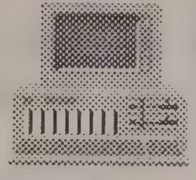

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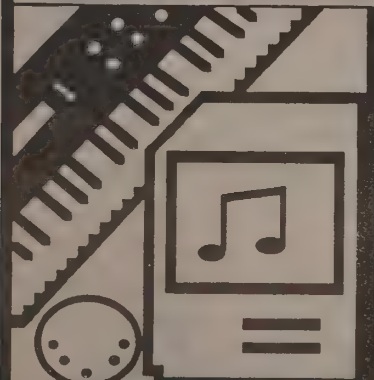

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SETTING UP

Installing the Cyberscope system on your computer is not a trivial matter. Its primeval simplicity demands in turn some effort to achieve consistent optical alignment and registration.

Because there are many different monitors out there, the Cyberscope uses Velcro patches at the top and bottom of the frame. This means that each time that you reattach the Velcro, trying to line up the holes in the hood with stick-on dots on the monitor frame, registration may be a bit imprecise.

A good clear help file in the installation software takes you through the steps to align and attach the hood. This is particularly convenient since the minimal manual was based upon the original PC version. With the calibration diagram on the screen, you then hold up the hefty hood and move it around until the left and right positions line up. The manual strongly suggests that you have another person there to mark the position while you hold it.

When you're working within a Cyberscope program, it looks like a normal window with depth. Any other screen image is transformed by the hood viewer mirrors; each half of the screen is split and rotated. This can present a difficulty when you are trying to find and open files on the desktop. Peering through one of the apertures at a skewed portion of the screen, and trying to move the cursor around with any accuracy is like trying to thread a needle with one hand behind your back while the other hand holds a mirror over your shoulder to see it. You have to take the hood off while you do that kind of work and then reinstall it to see in Superscope again. Each time you do that, you probably also throw your registration off.

If someone would write a system extension that translated the Finder desktop to Cyberscope, you could go between programs and navigate without having to take the hood on and off. That would certainly be the desktop metaphor of my dreams—file, folder, and application icons floating at different depths in space.

It isn't mentioned in the documentation, but the best way to work with this particular pocket universe if you are trying to create or develop with it is to have a two-monitor setup. Then you can have one monitor with the hood to view the Superscope documents, and the desktop and menus on the other monitor. Once I fired up my other monitor, a trusty Apple RGB 13, life was a lot less surreal.

VIRTUS VR FOR CYBERSCOPE

Virtus VR is a $99 3-D modeling program for Macintosh. It allows you to invent, explore, and alter realistic 3-D worlds. You can fly around and through full-color planes, solids, objects, and environments that you can build in minutes. You can apply this system to creating models and simulations for anything founded on three-dimensional massing as experienced through time. Home remodeling, commercial space planning, scenic design, scientific representation, legal reenactments, and recreational creativity are just some of the uses it can be put to.

I've been using a beta version of a new release of Virtus VR for the Mac that is VR-enabled. Open a file, and then choose Cyberscope from the bottom of the Walk menu. You will also see choices for Stereo Pairs and HMD. Enlarge the view window of the scene or the object to full screen, and you will see that it is split and turned in the Cyberscope orientation. Install the Cyberscope hood and the image will be in a very convincing geometric 3-D. Virtus VR has to chug a bit to update even on the Mac Centris 650 I'm using, but it really works as a desktop VR experience. And what you see is very sharp and clean.

The problem is that you really need to set up with the hood off. The bigger problem is navigating through the space. Virtus

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VR is set up so that you can move, or walk through, by using the arrow keys, or freely with the mouse. But when you move the mouse, it goes in that counterintuitive way (see above) of Cyberscope's configuration; and it's too tiringly spooky to do for very long, and you can get lost out of the space really fast. I'm not sure how to solve that problem, other than using a joystick that will allow you to configure it with negative x/y values. Still, this is something very promising for low-cost desktop VR and 3-D modeling and display.

CLIMBING MT. DIABLO

It is hardly a world standard, but there are already more products being created in the Superscope-compatible format. "VR Connection," a promotional newsletter that you can get by calling Simsalabim, lists programs such as: VistaPro; Lepton VR Toolkit; Sudden Depth from Chasm Graphics; Superscope Runtime System from Dimension International; CyberVision from Model Vision, which gives support for INTERGRAPH's Microstation CAD system; SGI Developer's Toolkit from NSCEE; 3D Workshop from Pacific Motion; WorldToolKit for Windows from Sense8; Qd3d/3Dpane/SmartPlane from Vivistar Consulting; and VR Development System from VREAM.

P.O.V. Mt. Diablo from Studio Software is an interactive documentary that will be available on a Mac CD-ROM by fall. Boot up and photographer-naturalist Stephen Joseph will take you on a virtual hike around the mountain with over three hundred panoramic shots and 3-D stereographic photos, thirty minutes of digitized video, and original music. A nice self-looping demo of P.O.V. Mt. Diablo is included in the Cyberscope package. The scenic photographs have the layered look of the classic View-Master slides.

WALKTHROUGHS AND FLYBYS CD

If you have access to a 386 PC machine with CD-ROM and Sound Blaster compatibility, one of the best tickets to ride for 3-D fun is *Walkthroughs and Flybys*, a book/CD package ($32.95) by Phil Shatz from Waite Group Press. This is a visual feast of what the amateur as well as the mid-range-and-up professional can do with off-the-shelf graphics software programs, many of them relatively inexpensive. There are demos made with 3D Studio, Fractint, Vistapro, POV-Ray, Deluxe Paint, and Domark's Virtual Reality Studio. The CD-ROM includes a thirty-minute 3-D graphics tour with the Sound Blaster and Sound FX, an introduction to producing your own demos on the PC, and over 300MB of Autodesk 3-D graphics in the FLI format.

The largest, and a very dynamic group of game demos, animated 3-D pieces and flybys were created by some students in Finland who put their programs through all of their paces and obviously had a good time doing it. And you will too. ■

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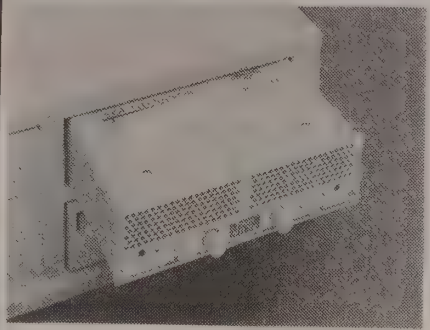

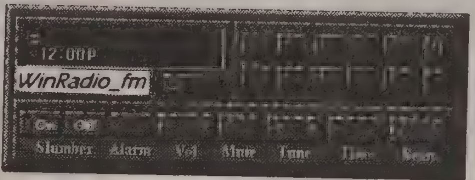

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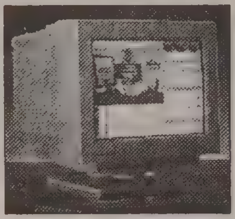

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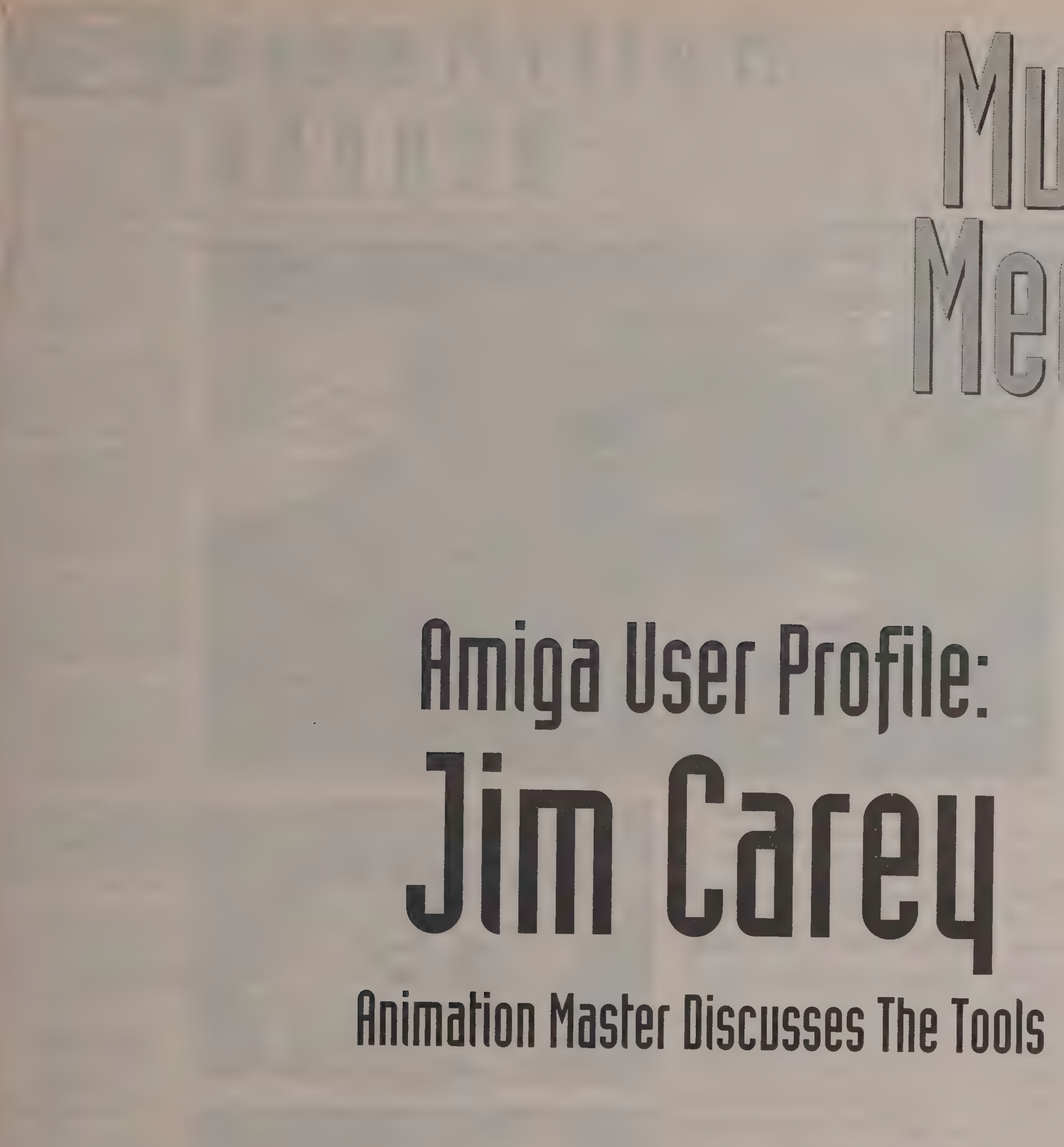


Amiga User Profile:

Jim Carey

Animation Master Discusses The Tools

Since meeting Jim Carey a few years ago, I've often been puzzled by the range of work he does: producer, editor, animator... Carey is unique, a jack of all trades and an amateur at none. He has worked on everything from low-budget industrial videos to very high-end commercials.

His current projects include some of the graphics for the Emmy-nominated Saturday morning cartoon *Where in the World Is Carmen Sandiego? Carmen,* based on the Brøderbund software series, is a slick blend of traditional cartoon, 3-D, and short computer animations. Carey, along with David Kahn (producer), Kent Butterworth (storyboards and characters), and Mike Kast (co-animator), handles the latter. He refers to it as "animated image processing," a computerized takeoff from the cut-and-paste Monty Python style of animation.

I had a chance to talk with Carey at his place in Westlake, California, and look at some of his current work.

How do you put animations together?

The animation itself is in 256 colors. But then this animation is 256 and the next animation is 256, so I would use ADPro [ASDG] to bridge them together. Of course when you're using ADPro you're in 24 bits, so there's three different elements coming together. Because I had the luxury of going a frame at a time and compositing at the last minute to an Exabyte drive, I could do my transitions in 24-bit in ADPro.

For instance, I would have a 24-bit background and I would have two or three animations, each with its own 256-color palette, and the ARexx script would throw it together.

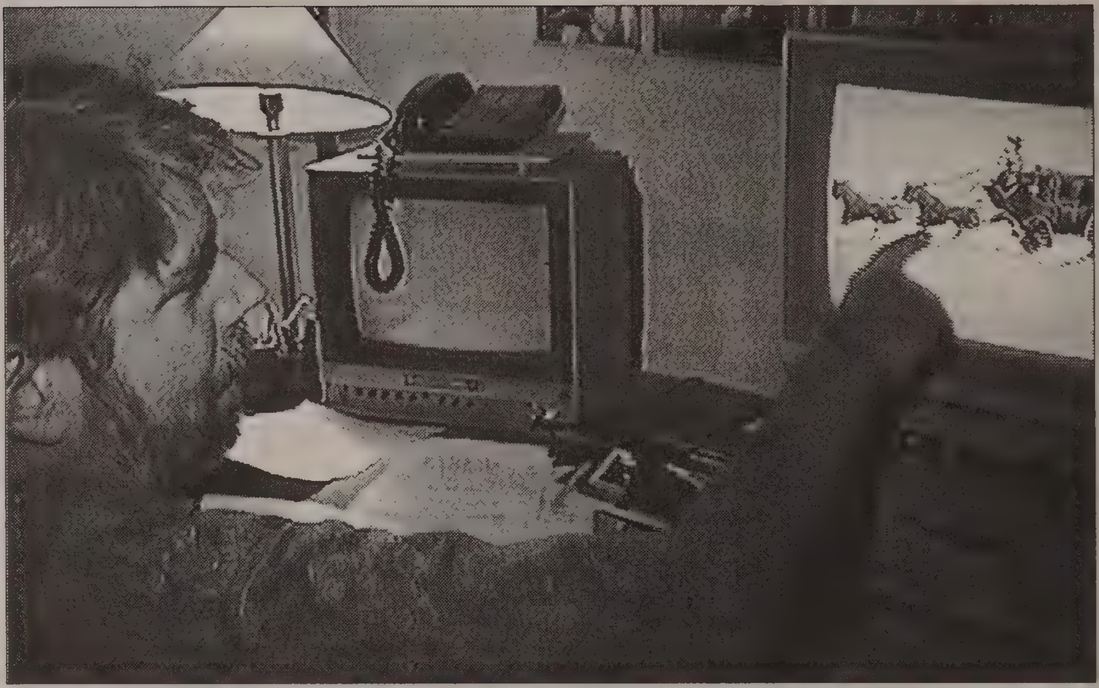
How do you know it came out OK?

I do check-animations back off the drive. In the beginning I would do a lot more testing because I was unsure of the format. Out of all that animation, we had maybe two or three bad frames. That's just amazing.

BY DOUGLAS J. NAKAKIHARA

So basically you did a lot of stuff in 256-color independently and just composited it in ADPro.

Right. Especially if I have a real nice background where I'd want to keep the color fidelity as high as possible. This background is 24-bit because it had such a nice gradient, this Wolfgang Mozart piece. Little Mozart, the second character, and the piano were a single 256-color DeluxePaint [Electronic Arts] animation. So with ADPro I would just take the background and composite the animation frames over it.



I had to get this one [another animation] done fairly quickly, so I just maximized one 256-color palette. I would take a look at all of the characters necessary and I'd assign a certain range in the palette for characters' costumes, and a certain other range for the background, and another range for the cutout of the heads. But even though it's just 8-bit, you still have a wide enough range of colors. Especially with dithering—random dithering—you see all of the rest of the characters come in using just 256 colors.

You really don't have that much disk capacity. How do you store all of this stuff?

The backgrounds are just static.

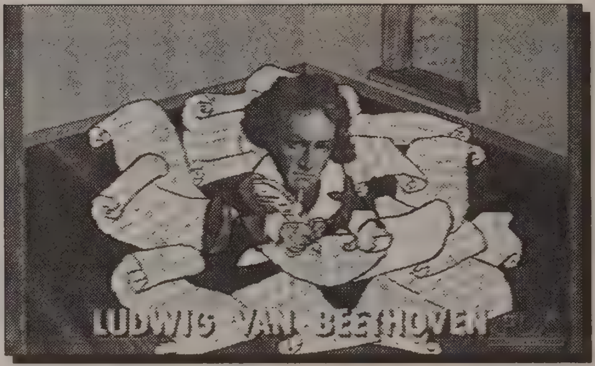
This is what we provide the client, 8mm tape. A 120-minute tape will hold about 10GB. A sixty-minute will hold a little over three thousand frames.

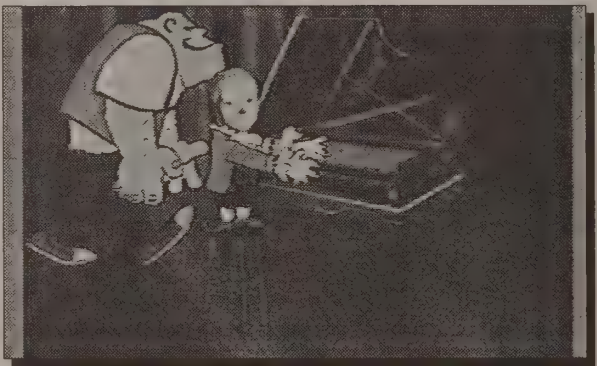
You use ARexx to control ADPro quite extensively. Aren't there programs that do this for you?

I don't mind writing ARexx scripts, because a lot of times you have to do very specific things. Now ProControl [ASDG] does quite a bit and so does Multiframe [MacroSystemUS]. They both have things that are really handy. But there are some times you need to get so specific you gotta write it. Thank God for ARexx. I would say 70% of the animations that I did on *Carmen Sandiego* had an ARexx script to do the final compositing. No way I could have turned out thirty minutes of animation in that period of time, of that type of single-frame animation, without ARexx. And I am excited that DeluxePaint 5 [a forthcoming upgrade] will support ARexx.

It's amazing how powerful DeluxePaint is.

It's much more powerful than I think people realize. At Electronic Arts, they never think of DeluxePaint, even





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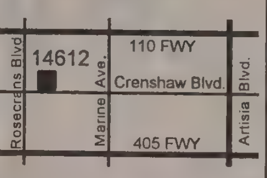

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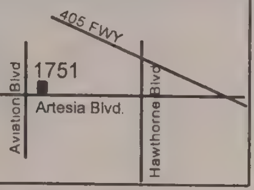

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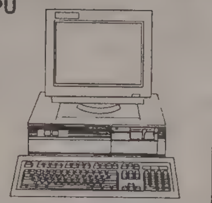

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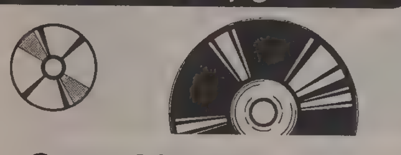

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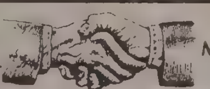

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DeluxePaint 5, as a professional program. "This is a program for amateurs"—that's the way they look at it.

Of course, I'm always urging them to do a little bit more. There are a few more things I would like in there, which they probably won't be able to put in because they don't think many people would take advantage of it, because they don't view it as a professional program.

What's the definition of "professional"?

Exactly.

Some of your techniques seem to break tradition.

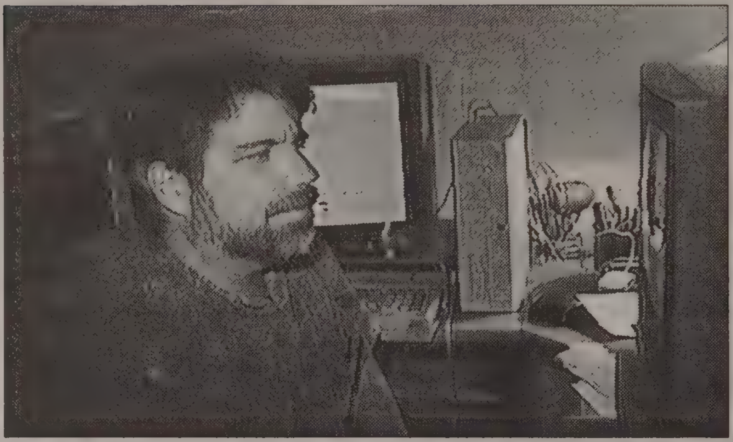
That's true. In fact, you want to stay away from tradition. The thing about it is, you usually have to learn the tradition before you can learn how to stay out of it. Rules are usually written after somebody's done something enough times. By the time they are codified, it's time to break them.

But it's a necessary evolution.

You get used to things and you have to take it a step at a time. I think that's true for the artists and animators, as well as the audience—you kind of have to grow up into it. I don't think you can just sit down and listen to a symphony by Beethoven and immediately grasp what you're supposed to grasp. You have to bring some information along with you.

Do people care that you do things on an Amiga?

I've gone to see a few companies, and there is a prejudice when they find out



I'm using an Amiga. I think I've lost some jobs because they know I'm using an Amiga—even though I know the stuff they're working with. I would say well over half of the clients out there don't care. Part of that is because they don't know what the platform is doing anyway; the people that do know about the Amiga appreciate it.

Recently a director came to my office, sat down, and saw all of the equipment right there in front of him that the work was being done on. I showed him a few clips from the *Carmen Sandiego* show and he was just amazed. "You did that on this computer?" He couldn't believe some of the things I was doing, especially the pans and scans on animated pieces, and some of the image processing.

You have to be a little worried now about the Amiga. Have you investigated Mac and PCs?

I was worried when I first learned about what was happening with Commodore—I've since regained a little optimism. So I started looking at what's

Continued on page 173

Animator Jim Carey: "Thank God for ARexx. I would say 70% of the animations that I did on Carmen Sandiego had an ARexx script to do the final compositing."

NewTek And Commodore Update

Just by chance, NewTek was working on its next promo tape close to where I work, and I received a surprise invitation from NewTek marketing head Donetta Colboch and Toaster trainer extraordinaire Lee Stranahan. I also finally met NewTek president Tim Jenison and his wife Leslie. Everyone was extremely nice and I hope I don't end up on the proverbial cutting room floor.

With some help from Brad Peebler, while at the studio I had a chance to really play around with the Flyer. Now I know where the name came from. The hand-made prototype board I saw had three PC board fans mounted on it and two PC box fans balanced on the edges of the opened A4000's case—any minute it was about to take off! I don't want to say too much about it now, other than it is an awesome product.

Lightwave 1.5 should be shipping by the time you read this, both in standalone and VideoToaster upgrade versions. There are several improvements, most notably the new Metaform feature that can help you literally turn a 2-D rectangle into a beautiful 3-D sports car in minutes.

At the L.A. Video Toaster Group meeting, Jenison spoke and provided some frank information on the future of the Amiga. According to Tim, two of the bidders are Samsung and a group headed by Jim Dionne, the former president of Commodore US. Dionne knows the Amiga and it would be wonderful to have him at the helm.

Tim also indicated that the bankruptcy trustees have made it clear that buyers must promise to get Amigas in production as soon as possible. NewTek seems to be totally confident that the Amiga will survive and that ample supplies of machines exist until production can resume. ■

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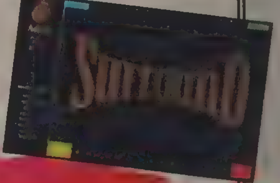

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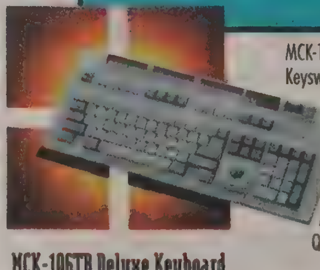

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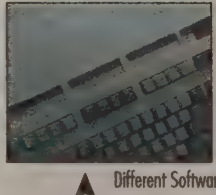

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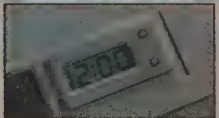

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ViewSonic 20 20" Digital (.28dp,76Hz)	1668
ViewSonic 21 21" Digital FST (.26dp)	1893

386SX/40MHz Barebones

- Mini Tower Case
- 40 MHz 386SX MB
- 1.2 OR 1.4 MB
- Floppy Drive
- Hard & Floppy
- Controller IDE
- 101 Key Keyboard
- Clock/Calander
- 2 Serial Ports/ 1 Printer Port/Game

$245

386DX/40MHz W/128K Cache Barebones

- Mini Tower Case
- 40 MHz 386 DX w/128K Cache
- 1.2 OR 1.4MB
- Floppy Drive
- Hard & Floppy
- Controller IDE
- 101 Key Keyboard
- Clock/Calander
- 200 Watt Power Supply
- 2 Serial Ports/ 1 Printer Port/Game

$299

486DX/66MHz W/256K Cache

- Mini Tower Case
- 66 MHz 486 DX w/256K Cache
- 1.2 OR 1.4MB
- Floppy Drive
- Hard & Floppy
- Controller IDE
- 101 Key Keyboard
- Clock/Calander
- 200 Watt Power Supply
- 2 Serial Ports/ 1 Printer Port/Game

$595

Prices Subject to change w/out notice. Financing & Leasing Available. EASY QUALIFYING! ****PM=Per Month

Resources

Calendar Of Events

Conferences, Shows, Special Events

August

August 6–7 Computer Marketplace. Fairplex, Pomona. National Productions. Call: 1-800-800-5600 or (408)778-5200.

August 13 Computer Marketplace. Sherman Entertainment Center, Reseda. National Productions. Call: 1-800-800-5600 or (408)778-5200.

August 13 Computer Show And Sale. Glendale Civic Auditorium. MarketPro Shows. Call: (415)456-6730.

August 13 Computer Super Show. Bren Events Center, UC Irvine. ACP. Call: (714)580-6995.

August 14 Computer Marketplace. Sequoia Conference Center, Buena Park. National Productions. Call: 1-800-800-5600 or (408)778-5200.

August 14 Computer Show And Sale. Community Center, Oxnard. MarketPro Shows. Call: (415)456-6730.

August 14–19 SCO Forum '94. Santa Cruz. Smith & Shows. Call: 1-800-553-9939.

August 16–18 Service & Support World Expo '94. San Jose. PCI. Call: 1-800-727-EXPO.

August 17–20 Fifth Annual Macintosh Summit Conference. UC Santa Barbara. UCSB Extension. Call: (805)893-4588.

August 17–21 ONE BBSCON. Atlanta, GA. ONE, Inc. Call: (303)693-5253.

August 20–21 Computer Mega Show. CSU, Northridge. American Mega Shows. Call: (818)961-3782.

August 20–21 Computer Show And Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)456-6730.

August 21 California Computer Show And Sale. Anaheim Stadium. Robert Austin Corp. Call: (415)347-0100.

August 21 Outdoor Computer Show And Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

August 27–28 Computer Marketplace. Fairplex, Pomona. National Productions. Call: 1-800-800-5600 or (408)778-5200.

September

September 3 Computer Show And Sale Expo. Panorama City. Bonanza Show Productions. Call: Paul, (415)595-1053.

September 3–4 Computer Show And Sale. Ventura County Fairgrounds. MarketPro Shows. Call: (415)456-6730.

September 6–9 Windows Solutions 94 Conference And Expo. San Francisco. ZD Expos. Call: 1-800-488-2883.

September 10 Computer Show And Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

September 10–11 Computer Show And Sale. Glendale Civic Auditorium. MarketPro Shows. Call: (415)456-6730.

September 10–11 Computer Show And Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)456-6730.

September 11 Computer Marketplace. Sequoia Conference Center, Buena Park. National Productions. Call: 1-800-800-5600 or (408)778-5200.

September 14–16 COMPUEXPO. San Jose. COMPUEXPO. Call: Marcia Gulino, (415)905-2354.

September 17 California Computer Show And Sale. Anaheim Stadium. Robert Austin Corp. Call: (415)347-0100.

September 18 Computer Show And Sale. Antelope Valley Fairgrounds, Lancaster. MarketPro Shows. Call: (415)456-6730.

September 19–23 LISA VIII: USENIX System Administration Conference. San Diego. USENIX and SAGE. Call: (714)588-8649.

September 24–25 Computer Mega Show. CSU, Fullerton. American Mega Shows. Call: (818)961-3782.

September 25 ACP Computer Swap Meet. 1310 E. Edinger, Santa Ana. ACP. Call: (714)558-8813.

AUGUST 21

OUTDOOR COMPUTER SHOW & SALE

CAL STATE NORTHRIDGE

This is the last outdoor Computer Show & Sale to be held at Cal State Northridge. Computer dealers from throughout Northern and Southern California will be on hand with everything from brand new computers and printers to cables, floppies, and software. Parking is free and admission is $2. Show hours are from 8 am to 3 pm. The monthly computer show at Cal State Northridge will continue indoors at the Student Union building, beginning September 10. There will still be free parking and the admission price will remain the same, but the hours will be from 10 am to 5 pm. For more information call Frank or Beth Perez at (805)520-1423.

AUGUST 14

COMPUTER MARKETPLACE

BUENA PARK

National Productions presents the Computer Marketplace. Hundreds of exhibitors with thousands of products of interest to beginners and advanced computer users will be featured. Admission and parking are free, and the show is from 10:00 am to 5:00 pm. The Buena Park Computer Marketplace takes place at the Sequoia Conference Center. Call: 1-800-800-5600.

SEPTEMBER 3

COMPUTER SHOW AND SALE EXPO

PANORAMA CITY

Bonanza Show Productions and the former executives of the original Cal State Northridge show present the Computer Show and Sale Expo in Panorama City. There will be millions of dollars of state-of-the-art computer merchandise under one roof, everything from CD-ROMs, software, hardware, memory chips, peripherals, and more. The show is located at 14650 Parthenia Dr., one block west of Van Nuys Blvd. in Panorama City, and there is free parking and air conditioning. Admission is $5 and all display ads have a $2 coupon. Children under 12 are free. For more information call Paul Escalante at (415)595-1053.

COMPUTiX systems at LOW PRICEs, with MULTIMEDIA or without

VLB486DX2 -66MHz EXTRA

EXTRA PERFORMANCE BY WESTERN DIGITAL
(WD ROCKET CHIP 1MB DRAM)

256k Cache, Intel 486DX2-66MHz CPU
***3 VLBus MainBoard,** Pentium P24 Ready*
***8MB Memory** (Expandable to 32MB)*
***Western Digital** Vesa Local Bus SVGA 1M Dram*
(GUI Graphic Accellerator, Optional 2Mb)
***32Bits Fast VLB IDE** Hdd Controller W/ 2serial, 1par.*
***15" SVga,** .28DPI, Flat Screen, Digital Monitor*
***Fast 420MB** IDE Hardrive, 13ms*
1.44Mb 3.5" Floppy Drive
101 KeyBoard & 3 Button Mouse
***Mid-Size Tower** Case W/ 6 Drive Bays*
MS DOS 6.2 w/ Manual

$1445

DX4 100MHz ...$1875

FREE
DOS 6.2 (Preloaded)
W/SYSTEM

PENTIUM P5 60MHz ULTRA

ULTRA SPEED INTEL P5 64bits PROCESSOR
(PCI 64BIT GRAPHIC, 66, 90, 100MHz SPEED)

256k Cache, Intel P5 CPU, W/ CPU Fan
3 PCI & 4 ISA Slot MainBoard
***8MB Memory** (Expandable to 64MB)*
***Spider Graphic 64-Bit** PCI Local Bus SVGA 2Mb*
(64Bits GUI Graphic Accellerator, Maxium Ram 4Mb)
***32Bits Fast PCI IDE** Hdd Controller W/ 2serial, 1par.*
***15" SVga,** .28DPI, Flat Screen, Digital Monitor*
***Fast 420MB** IDE Hardrive, 13ms*
1.44Mb 3.5" Floppy Drive
101 KeyBoard & 3 Button Mouse
***Mid-Size Tower** Case W/ 6 Drive Bays*
MS DOS 6.2 w/ Manual

$2145

66MHz ...$2245
90MHz ...$2625
100MHz ..CALL

We Carry All SPIDER Graphics Video Cards

COMPLETE 486 VLB

Energy Saver

- 486SX or DX CPU
- Intel Pentium p24 Upgradeable
- 4Mb RAM, 256k Cache
- 250Mb Fast IDE Hardrive
- Fast VLBus IDE Controller
- 14" Non-Inter. SVGA .28Dpi Monitor
- Fast VLB SVGA Accellerator 1MB
- 1.44Mb Floppy Drive
- Mini-Tower Case, W/ 5 Drive Bays
- 7 ISA Slot and 3 VLB Slots, 2s/1p/1g
- 101 KeyBoard & Mouse

SX33 **$925**	DX33 **$999**
DX2 50 **$1055**	DX2 66 **$1155**

4DX 66 PCI SCSI-2

Energy Saver

- Intel 486DX2 66MHz CPU
- Pentium P24T Upgradeable
- 8Mb RAM, 256k Cache
- 520Mb SCSI-2 12ms Hardrive
- 32 Bit PCI SCSI-2 HD Controller
- 15" .28Dpi, Flat, No-Flicker Monitor
- Hi-Performance PCI Graphic 1MB
- 1.44Mb Floppy Drive
- Mid-Tower Case, W/ 6 Drive Bays
- 7 ISA, 2 VLB & 3 PCI Slots, 2s/1p/1g
- 101 KeyBoard & Mouse
- MS-DOS 6.2 W/ Manual

8MB/520MB	16M/1GB
$1755	**$2295**

BASIC SLIM SYSTEM

- All Basic System Include:
  - ✓ MotherBoard With or Without Cache
  - ✓ 2Mb Memory
  - ✓ Slim Desktop Case (Space Saver)
  - ✓ IDE & IO Controller
  - ✓ 101 KeyBoard
  - ✓ Fully Burn-in & Tested

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486SX 33MHz CACHE ...$425
486DX 33MHz CACHE ...$515
486DX2 50 CACHE ...$535
486DX2 66 CACHE ...$625

Optional Upgrades

- **MULTIMEDIAs ...$275**
  2X Panasonic CD-Rom, 16bit Sound Card (Sound Blaster 16), Amplified Speakers, and 5 MPC Titles
  (Encylopedia, US & World Atlas, Mavis Typing Tutor, Chessmaster.)
- **ENERGY SAVER CENTER ...$45**
  (Save Electricity & Extend the life of Computer Equipment)
- **UNIVERSAL IDE CACHE ...$75**
  (With 512k For ISA, PCI, VLB, EISA)
- 2X, 320ms CD-ROM Drive $145
- 96/24 Internal Fax/Modem $40
- 14.4k Internal Fax/Modem $79
- 4Mb Memory Upgrade $140
- Upgrade 14" NI to 15" Monitor ...$110
- 250MB Internal Tape Backup $145

COMPUTER PARTs with 1 Year Warranty

486 VESA LB MAINBOARD

256K CACHE, P24T, 3 VLB & 7 ISA SLOTS w/o CPU
Fully Burn-in and Tested. Perfect Upgrade
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(30 PIN SIMM FOR COMPATIBLE COMPUTERS)
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(72PIN) 4MB ...$155 8MB ...$315 16MB ...$625

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64BIT ACCELERATOR, 4MB MAXIUM, PCI or VLB
2MB ...$195 4MB ...$295
Drivers For Windows 3.1, OS/2.1, Windows NT 3.1, ACAD 12 & More.

486 PCI GREEN MAINBOARD

256K CACHE, Zipp Socket, 2 VLB, 4 ISA & 3 PCI SLOTS w/o CPU
Fully Burn-in and Tested. Intel PCI Local Bus, 72PIN Simm
Ok ...$135 4MB ...$260 8MB ...$395 16MB ...$695

AT MEMORY EXPANSION BOARD

OK TO 8MB RAM, USE SIMM, EXPAND or EXTEND RAM
OK ...$59 1MB ...$90 2MB ...$125
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DIAMOND STEALTH 64

64BIT ACCELERATOR, 4MB MAXIUM, VLB or PCI (+$15)
2MB ...$345 4MB ...$525
100+ WinMark & Faster Than Diamond Viper Card

PENTIUM P5 MAINBOARD

60 or 66MHz, 256K CACHE, 3 PCI & 4 ISA SLOTS w/o CPU
Fully Burn-in and Tested, Ultimate Upgrade (Use 72Pins Simm)
Ok ...$295 8MB ...$545 16MB ...$845

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HP II, III, IV, SI. PANASONIC, CANON, IBM ...
We Carry All, Please Call

VIDEO & IDE CONTROLLER

TRIDENT 1MB SVGA VLB, 16.8M COLORS ...$69
UMC IDE w/ Io CONTROLLER ...$19
CIRRUS LOGIC 1MB SVGA ISA, 16.8M COLORS ...$55

486 Local Bus & EISA MAINBOARD

W/ S3 1MB SVGA LB CARD & LB IDE 1MB CACHE
256K Cache, 8 EISA & 2 Local Bus Slots w/o CPU
COMBO ...$295

BIG HARDRIVES & BIG SAVINGS

CONNER 420MB IDE, 13MS, ...$245
QUANTUM 1GB, SCSI-2, 10MS ...$685
540MB IDE, 12MS ...$335 540MB SCSI-2, 12MS ...$425

GATEWAY ETHERNET LC16

FAST 16BITs, COAX, NOVEL, WINDOWS WORKGROUP COMPATIBLE
1 TO 9 ...$29 10 UP ...$27
Limited Quantity Available.

PROCESSOR (CPU)

30 DAY WARRANTY ONLY & PRICES ARE SUBJECT TO CHANGE
Please Call For Price $$$
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101 FLIP TOP KEYBOARD

1 YEAR WARRANTY
$15
Reseller Please Call for Discount.

17" DISPLAY MONITOR

.26DPI, 1280X1024, MICROPROCESSOR CONTROLLED, TOSHIBA TUBE
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All Sale Items Are Based on COD, Cash or Cashier Check - 14 Days Money Back Guarantee, Exclude Shipping Fee - One Year Parts & Labor Warranty
All Brand Names Are Trademards Of Their Respective Companies - Prices And Specifications Are Subject To Change Without Notice.

September 25 Computer Show And Sale. Oxnard Community Center. MarketPro Shows. Call: (415)456-6730.

October

October 1 Computer Show And Sale Expo. Panorama City. Bonanza Show Productions. Call: (415)595-1053.

October 1–2 Computer Show And Sale. Glendale Civic Auditorium. MarketPro Shows. Call: (415)456-6730.

October 1–2 Computer Show And Sale. Scottish Rite Center, San Diego. MarketPro Shows. Call: (415)456-6730.

October 2 Computer Marketplace. Sequoia Conference Center, Buena Park. National Productions. Call: 1-800-800-5600 or (408)778-5200.

October 4–6 Digitalk Dev Con '94: Object Architecture For Client/Server Conference. Irvine. Digitalk. Call: 1-800-531-2344.

October 8 Computer Show And Swap Meet. CSU, Northridge. Advertising Concepts Productions. Call: Frank or Beth Perez, (805)520-1423.

October 8–9 Computer Marketplace. Fairplex, Pomona. National Productions. Call: 1-800-800-5600 or (408)778-5200.

October 11–13 Multimedia Expo. San Francisco. Smith & Shows. Call: (212)226-4141.

October 12–14 TeleCon XIV: Applications Of The National Information Infrastructure. Anaheim Convention Center. Applied Business teleCommunications. Call: 1-800-829-3400.

October 15 Computer Marketplace. Earl Warren Showgrounds, Santa Barbara. National Productions. Call: 1-800-800-5600 or (408)778-5200.

October 15–16 Computer Mega Show. Orange County Fair Expo Center. American Mega Shows. Call: (818)961-3782.

October 22–23 International Computer Show And Sale. Pasadena Center. R.G. Canning. (213)587-1500, Event Ext. 4; (909)628-4236, Event Ext. 50.

October 24–26 National Human Resources Information Technology Expo And Conference. San Jose. Blenheim NDN. Call: Jill Reynolds, 1-800-232-3976.

Classes, Seminars, Workshops

August

August 6–7 Basic Laser Service Training: LS101 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

August 8–10 Digital Transmission For Multimedia And The Information Superhighway Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 10 Power Tools For Publishing: A One-Day Forum For Designers, Production Professionals, And Printers Who Want To Get More Done More Profitably In Less

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Last Outdoor Show
Sunday
August 21st
Located On Zelzah, 50 Yards South Of Devonshire
Show Hours are 8am to 3pm
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- September 10th
- October 8th
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Student Union Hall
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Computer MARKETPLACE

COMPUTER TRADE SHOW
WHOLESALE PRICES
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10:00 a.m. to 5:00 p.m.

Pomona Shows
300 EXHIBITS

Hundreds of companies having price wars to compete for your business. You couldn't find this much inventory in a hundred computer stores nor at these prices. There is also a consignment table to sell your computer equipment.

SHOW DATES

August 13 Saturday	**RESEDA** - Sherman Entertainment Center From 101 Freeway, take Reseda off ramp, turn left (if traveling East) to Sherman Way, turn right, one block to Canby Street. 18430 Sherman Way.	**ADMISSION FREE!**
August 14 Sunday	**BUENA PARK** - Sequoia Conference Center Take the Beach Blvd. Exit off the 91 Freeway, go one block North to 7530 Orangethorpe.	**ADMISSION FREE!**
August 27 & 28 Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds) Exit Highway 10 at Fairplex Drive. Go North to McKinley, turn right. Turn Left on White Avenue to Gate 14.	Admission: $7.00
September 10 Saturday	**RESEDA** - Sherman Entertainment Center	Admission: $5.00
September 11 Sunday	**BUENA PARK** - Sequoia Conference Center	Admission: $5.00
September 17 Saturday	**SAN MATEO** - EXPO CENTER (San Mateo Fairgrounds) From Hwy 101 take 92 West. Take the Delaware Street Exit. Turn right on Delaware. Follow signs to Expo Center.	**PREMIER SHOW** **ADMISSION FREE!**
October 1 Saturday	**RESEDA** - Sherman Entertainment Center	Admission: $5.00
October 2 Sunday	**BUENA PARK** - Sequoia Conference Center	Admission: $5.00
*** October 8 & 9** Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds) ***MORE THAN 20 SEMINARS SCHEDULED FOR THIS SHOW!!**	Admission: $7.00
October 15 Saturday	**SANTA BARBARA** - Earl Warren Showgrounds Highway 101 and Las Positas.	Admission: $5.00
October 22 Saturday	**SAN MATEO** - EXPO CENTER (San Mateo Fairgrounds)	Admission: $7.00
October 29 & 30 Saturday & Sunday	**POMONA** - Fairplex (LA County Fairgrounds)	Admission: $7.00

NP

National Productions, Inc.
(408) 778-5200 or 800-800-5600

Time. Los Angeles. Apple Computer, Inc. and *Pre* Magazine. Call: 1-800-947-5670 ext. 500.

August 10–12 Multimedia Compression: Applications And Standards Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 12 Navigating On A Turbulent Sea: How Key Multimedia Vendor Strategies Impact Your Business Seminar. Los Angeles. Gartner Group. Call: Terri Carr, 1-800-645-6395.

August 15–16 Accessing The Internet Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

August 15–18 Object-Oriented Programming And Design Under The C++ Object Model Class. Los Angeles. UCLA Extension. Call: (310)825-1047.

August 18–19 Understanding TCP/IP Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

August 18–19 Windows On NetWare Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

August 22–24 Software Safety: Principles And Practice Class. Los Angeles. UCLA Extension. (310)825-1047.

August 31–September 1 Data Communications And Networking Seminar. San Diego. Center for Advanced Professional Development. Call: (714)261-0240.

September

September 12–13 NetWare Getting Started Seminar. Los Angeles. Center for Advanced Professional Development. Call: (714)261-0240.

September 16 Trekking Through The Wilderness: Where Is The Information Superhighway? Workshop. Monrovia. Los Angeles Chapter of the American Society for Information Science. Call: Nancy Zachariasen, (818)395-6704.

September 24 Advanced Training New Machines: LS202 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

September 26 Making Multimedia Deals: The How-To Seminar Bridging The Gap Between Hollywood's Talent & Technology. Los Angeles. Sensational Seminars, Inc. Call: Nina Steiner, (310)288-3425.

September 29–30 The Macintosh Survival Course. Los Angeles. Data-Tech Institute. Call: (201)478-5400.

October

October 1–2 Basic Laser Service Training: LS101 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

October 3–4 Software And Specification Testing Seminar. Irvine. Data-Tech Institute. Call: (201)478-5400.

October 12 Software Licensing Agreements Seminar. Los Angeles. Center for Advanced Professional Development. Call: (714)261-0240.

October 13–14 Certified NetWare Engineer Test Review Course. Los Angeles. Center for Advanced Professional Development. Call: (714)261-0240.

October 15–16 Advanced Training Electronics: LS125 Seminar. Irvine. Diversified Technigraphics, Inc. Call: 1-800-457-5776.

October 31 Successful GUI Migration Strategies Seminar. Los Angeles. DCI. Call: (508)470-3880.

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Sep 16, 17 Fri 11-8, Sat 10-6 — NEW — UCLA
308 Westwood Plaza, W.L.A. (Ackerman Union)
Sep 24, 25 Sat & Sun 10 - 5PM — Cal State Fullerton
800 N. State College Blvd, Fullerton (Titan Pavilion)
Oct 15, 16 Sat & Sun 10 - 5PM — Orange County Fair Expo Center
88 Fair Drive, Costa Mesa (Bldg #14)
Nov 12, 13 Sat & Sun 10 - 5PM — UCLA
308 Westwood Plaza, W.L.A. (Ackerman Union)
Dec 17, 18 Sat & Sun 10 - 5PM — Cal State Northridge
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Saturday, October 1, 1994
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From 170 exit Roscoe Blvd. to Van Nuys Blvd. Right on VanNuys Blvd. to Parthenia.
From 405 exit Roscoe Blvd. to Van Nuys Blvd. Left on Van Nuys Blvd. to Parthenia.
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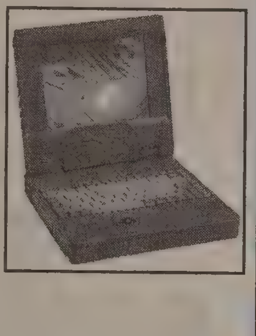

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- 8MB RAM Exp. to 16/24/40MB
- 32 Bit VL-Bus IDE
- 3.5" 1.44MB FDD
- Removable HDD 250/340/520MB
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- 32 Bit VL-Bus Video w/Accelerator
- 9.5" Dual Scan/Active LCD
- Simultaneous Crt & LCD Display
- Intelligent Power Management
- Built-in Microphone & Speaker
- Sound Blaster Compatible
- Built-in 25mm Center Trackball
- PCMCIA Type 3 and Type 2 Slots
- NiMH Rechargeable Battery
- Carrying Bag w/Strap
- Microsoft DOS 6.21

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Pentium-60, 8MB/250MB

Dual-Scan Color LCD	$3185
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Also Available Pentium-66MHz

NP 9200

Local Bus 486DX4-100 + Built-in Sound Card

- Intel SL Enhanced 486 CPU 8K Cache
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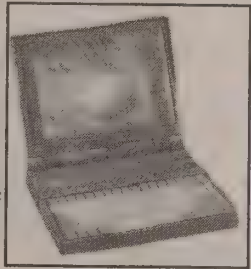
- Removable 2.5" HDD 250/340/520MB
- 32 Bit VL-Bus Video w/1MB RAM
- 3.5" 1.44MB Floppy Disk Drive
- Built-in Sound Card, Speaker, Microphone
- Built-in 25mm Center Trackball
- PCMCIA Type IV Slot
- 2 NiMH Hot Swap Battery
- 9.5" Mono/Dual Scan/Active LCD Screen
- Carrying Bag w/Strap
- Microsoft DOS 6.21

250MB/4MB	Mono	Dual Scan Color	Active Color
486SX-33	$1595	$2075	$2995
486DX-33	1765	2245	3165
486DX2-66	1815	2295	3215
486DX4-100	2165	2645	3565
340MB HDD	+$100		
520MB HDD	+$290		
4/8/12/16MB Card	+$210/380/620/815		
Docking Station	+$440		

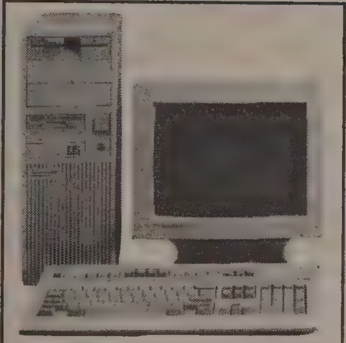
NP700

Powerful PC Affordable Price



- Intel 486 CPU w/8K Cache
- 4MB RAM Exp. to 8MB or 16MB
- Removable HD 120/250/340/520MB
- 3.5" 1.44MB FDD
- NiMH Rechargeable Battery
- PCMCIA Type II Slot
- 9.5" Mono/Dual Scan LCD Screen
- Built-in Trackball Module, Removable
- 1MB Video RAM
- Carrying Bag
- MS DOS 6.21

250MB/4MB	Mono	DualScan Color
486SX-25	$1335	$1835
486SX-33	1385	1885
486DX-33	1515	2015
486DX2-66	1535	2035
120MB HDD	-$70	
340MB HDD	+$100	
520MB HDD	+$290	
4/8MB RAM Card	+$210/430	
Docking Station	+$315	



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INTEL 486DX2-50	$1109
INTEL 486DX2-66	$1129
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AMD 486DX-40	$1069
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4Next GT BBS. (310)420-4788, (714)956-4698. 300–28,800. 72 lines. More local numbers. 24 CD-ROMs, Internet, FidoNet, chat, games, and more. Free trial. [Exp. #127.]

Alternate Reality. (310)799-0380; (714)642-6256, 638-7249. 24hrs., 300–28,800. 32 lines. Friendly, adults only, Internet, MatchMaker, adult files, TradeWars 2002, parties, confidential. [Exp. #127.]

Annex! BBS. (213)971-4686, (310)388-3818, (818)786-5600. 8-N-1, 1200–14,400. 66 lines. Games, files, chat, TradeWars, Internet, parties, and more! Adults only! Friendly! Sysop: Gregory Gooden. [Exp. #126.]

AOS. (213)566-6727, (310)838-8203, (714)750-8423, (805)522-4950, (818)969-8BBS. 8-N-1, 2400–14,400 local on request. 34-line family board. Chat, forums, games, tutors, Interlink, MajorNet/mail, friends and fun, more. Free trial. Sysop: Nancy Teppler. [Exp. #127.]

Asia America BBS. (310)326-1683; (714)772-5301; (818)284-4519, 989-2041. 8-N-1, 2400/9600/14,400. Focus on Pacific Rim culture and business, with Action Teams for business projects. Free. Sysop: Bob F. Howard. [Exp. #127.]

Atlantis, The Lost BBS. (714)256-1360, 828-6459; (818)859-6300, 579-4143, 798-4007. 2400–16,800. Ripterm EGA, multiline chat, games, forums, and fun. Sysop: Ron DeRuyter. [Exp. #127.]

Aussie BBS. (310)425-5710; (714)670-6500, 537-4300. 14,400. 18 lines. 35,000+ file library, TradeWars 2002, 30 multiuser games, Internet, RIP support. Sysop: Mike Szabados. [Exp. #128.]

Compu-Net BBS. (213)934-2812, (310)822-0038. Internet access. CompuScans, CD-ROMs, dating, adult, windows, IBM, Mac. [Exp. #128.]

CompuShopping Net. (818)810-8947, 842-2873; (909)464-2750. 8-N-1, 2400–14,400. Lowest price CD-ROM titles sale, adult GIFs and shareware, free download. [Exp. #128.]

Crystal Palace. (310)472-2598, (818)765-2171. 8-N-1, 24 hrs., 300–14,400. 15+GB of GIFs, stories, shareware on CD-ROM; Netmail; msg. database; matchmaker; games; computer store. Sysop: Daniel Mathis. [Exp. #127.]

EDEN—The Electronic Garden. (310)421-2420; (714)548-1900, 530-6335, 528-7226, 472-9456. 24 hrs., 14,400. 25 lines. Adults only playground, featuring chat, games, email, forums, files, and live events. Free trial. Sysop: Daniel Vesely. [Exp. #127.]

Hard Drive Cafe. (213)226-9020; (805)254-1048; (815)527-9333; (818)993-5516, 985-6693. 14,400. Eight lines. Internet email and newsgroups, games, six CD-ROMs, chat, forums, more. 18+ yrs. Free trial. [Exp. #128.]

Interludes BBS. (310)425-1659, (714)828-7093, (909)613-0307. 8-N-1, 24 hrs., up to 14,400. 13 lines. Chat, games, quality news files, Internet, Usenet, MajorNet. Free trial. Sysop: Angela Duarte. [Exp. #126.]

KBBS. (213)725-3047; (310)558-0145; (805)520-7323; (818)886-0872. 24 hrs. 68 lines, 60,000+ files, national chat all evening. Free trial. [Exp. #126.]

Korea America Online. (213)962-3634, (714)449-9373. 1200–14,400. 16 lines. Bilingual, Korean programs, information, chat, BBS in Korea list. $10/month, $80/year unlimited access. Sysop: Wayne Jeong. [Exp. #126.]

Miller's Party Board. (213)727-0251, 569-9191; (310)815-0117, 212-3469, 929-4304; (714)739-1060; (805)583-3142; (818)879-1333, 700-0627, 240-8296, 769-2302, 577-5880, 961-2458. 14,400. 32 lines. Chat, live games, 4GB library, pub areas, WorldLink, and more. 14-day free trial. Sysop: Jack Stern. [Exp. #128.]

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Modem Butterfly's Connection. (310)841-6900, 767-1010, 421-9231; (714)828-5500; (805)581-0700; (818)842-6900, 787-6900, 798-9900, 454-1919, 887-7900. 24 hrs., 1200–9600. Intelligent fun, local events, color photos of MBCers, instant access. Fee. [Exp. #128.]

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BBS Spotlight

By John Wolcott

Discovering The Virtual Community

Bulletin boards, each with its own theme, have a community of users. Some feature "adult only" topics while others bring you fantasy worlds or new twists to online features. This month's BBS Spotlight examines a BBS that addresses "cutting edge" technology in the computer world.

Amulet:vc (Amulet: virtual community), now in its third year of operation, is an adventure into the future of computerized development. Sysop Dan Gutierrez is proud to offer a very different BBS experience. Gutierrez remarked, "We acknowledge the importance of informational exchange. Provided here is a knowledge base where users can stay up-to-date with evolving technology." Bound only by the imagination of user input, the latest areas of computer study, which were unthinkable only a few short years ago, are pursued with gusto. You don't have to be a pocket protector-wearing computer geek to appreciate new worlds spoken of here.

Amulet:vc is located in Santa Monica and boasts a membership exceeding fifteen hundred. Two incoming phone lines are supported by US Robotics HST Dual Standard modems at rates up to 14.4Kbps for reasonably fast data transfer. Software running the system is Wildcat v3.55I, providing ANSI emulation and a professional appearance. System hardware includes a 486/50 DOS-based computer.

The theme for this BBS, which separates it from others, is a collection of "virtual communities" addressing "way out" topics such as virtual reality development and conferences, artificial life, mirror worlds, artificial intelligence, cyberspace, and biotechnology. System features include the BBS standards: file download libraries, chatting with the other node, classified ads, employment opportunities, and various virtual community forums.

The file download libraries support DOS and Windows programs. Over two thousand files available cover topics such as communications, utilities, and virtual reality-type programs. Users upload programs for the community to use. All files uploaded are virus checked and reviewed for appropriateness before being available for download. The system supports all popular download protocols including Zmodem.

Classified ads and employment opportunities offer a marketplace for products and services as well as your talent. The ads amount to a form of "online shopping" without the formality of big commercial enterprises. For those seeking employment, being logged on to a computer development-oriented BBS will tell potential employers that you are at least somewhat computer literate.

The virtual community forums are where users interact with their wildest imagination and creativity. If you have ever wondered what cyberspace or artificial intelligence is, you will be able to do online research and discuss such topics in the forums. One new system user commented, "I wish I had known about this BBS a year ago. I get information and discuss technology that I can't find anywhere else." Don't be shy. There's some real enlightenment here for the curious user.

A minimal subscription fee of $5.00 per month will put you in touch with the evolution of computer technology. Amulet:vc can be reached by calling (310)453-7705 with standard BBS protocols of 8-N-1. Give Amulet:vc a call to reach out and touch the future. ■

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Oasis. (310)799-1830, (714)897-0343. 8-N-1, 24hrs., 2400–14,400. Internet...email and newsgroups, CD-ROM files, business and educational support system. [Exp. #127.]

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Prism. (310)799-0380; (714)454-9242, 638-7249, 642-6256. 8-N-1, 24 hrs., 300–28,800. 32 lines, 4.5GB. Internet, MajorNet, TradeWars 2002, adult areas, social events. Instant access. [Exp. #127.]

Pro-Line. (818)592-6083, 507-1042; (805)527-3350. 46 lines. Chat, matchmaking, lifestyles, email, files, fun, and more. Free trial. [Exp. #127.]

US Pompeii. (213)878-2801, 262-8110; (310)324-5782, 645-6969, 832-3526; (805)583-1180; (818)768-6745. 8-N-1, 24 hrs., 2400. Local/international email, forums, chatlinks. Matchmaker, libraries, databases. One month free. Sysop: Zippy Manus. [Exp. #126.]

213

The Career Network BBS. (213)629-1472, 629-5119. 8-N-1, 7:30 am–1:30 pm, 1200/2400/9600. Hundreds of JOBS! throughout the US; your resume can reach 200+ employers monthly. Sysop: Steven McCormick. [Exp. #128.]

Chastity Realm. (213)480-0165. 8-N-1, 24 hrs., 14,400. Great files, great subs, great users, great sysop. [Exp. #128.]

The Death Star BBS. (213)541-0618. 24 hrs., 28,800. Full Internet access, FidoNet, 2.1GB, online games. $8/month for full Internet. Sysop: Joseph Haupt. [Exp. #128.]

LAAUGLine BBS. (213)387-1002. BBS of the Los Angeles Amiga User Group. [Exp. #126.]

LA Collect. (213)661-6299. 8-N-1, 24 hrs., up to 14,400. Civic network, serious talk, new BBS technology, all welcome. Free. Sysop: Roger Eaton. [Exp. #128.]

310

AMULET:vc, A Collection Of Virtual Communities. (310)453-7705. 8-N-1, 24 hrs., 1200/2400/9600/14,400. CyberSEX, CYBER-Journals, virtual reality/worlds, Cyberpunk lifestyles. Sysop: Dan D. Gutierrez. [Exp. #127.]

California Home Buyers BBS. (310)763-7866. 8-N-1, 24 hrs., 2400. New residential home sales information, real estate-related articles, games, newsletter, and more. Sysop: Winnfort J. Myles. [Exp. #127.]

CircusMaximus BBS. (310)787-1469. 2400/9600. SDN, SDS, FidoNet, Fernwood-OS/2 file areas, Internet email, Usenet news, ISDN. Free trial. Sysop: David Lord. [Exp. #128.]

Dejavu BBS. (310)218-3561, 218-3562. 8-N-1, 24 hrs., 2400/14,400. Files, games, msgs., email, chat, Asian guys and gals welcome. Free. [Exp. #128.]

The Edison BBS. (310)440-3825. 8-N-1, 300–14,400. Computer BBS for independent inventors. Password: Help. [Exp. #128.]

Fantasia BBS. (310)986-9705. Up to 28,800. Free Internet email/newsgroups, 4+GB, many CD-ROMs, adult echomail, ASP, FILEbone. Sysop: Brian Andrus. [Exp. #128.]

The Great CHR$(27) BBS. (310)693-7907. 24 hrs., Programming files, all languages, shareware, code samples, tech talk. No fees or ratio. Sysop: Alan Selmanaj. [Exp. #126.]

Independent Filmmakers Forum. (310)425-0012. 8-N-1, 24 hrs., 2400/9600/14,400. Your connection to Hollywood, topical forums, chat, networking, electronic books, downloads, and more. Free trial. Sysop: The Administrator. [Exp. #127.]

La Mirada's The Modems Delight BBS. (310)944-1221. 24 hrs., 1200–16,800. Multi-interest files, doors, games, fun, Qmail4, echomail, FidoNet, RimeNet. Sysop: Ron Dishon. [Exp. #128.]

Mac-Hac'ers BBS. (310)549-9640, 549-9664. 8-N-1, 24 hrs., 300–16,800. All computers, six CD-ROMs, jokes, technical area, international mail, large graphics area, much more. Sysop: Bud Grove. [Exp. #128.]

Mommadillo's BBS And Breakfast. (310)438-7830. 24 hrs., 2400, 14,400 soon. WWIVNet @3075, WW4Net @1175, Tradewars. [Exp. #127.]

Moroni BBS. (310)392-3981: 24 hrs., 300/1200/2400/ 9600. Includes hundreds of Mormon church-related documents plus 650MB of shareware. Free. [Exp. #127.]

One World. (310)372-0987. Ecology, gardening, health, alternative news, international network. Free. [Exp. #126.]

Original Apple Corps BBS. (310)454-4660. Apple II support. Sysop: Ed Molina. [Exp. #128.]

the original off-off broadway BBS. (310)453-7038. 8-N-1, 24 hrs., 300–9600. Nonsubscription, text files/messages only. Using MajorBBS software and CompuCom Speedmodem. Sysop: James Gossage.

Continued on page 137

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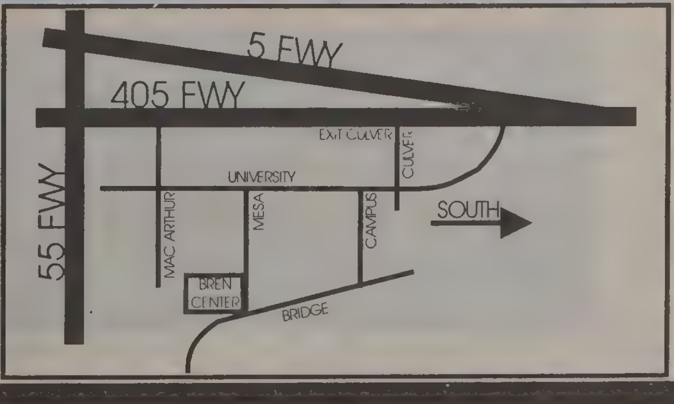

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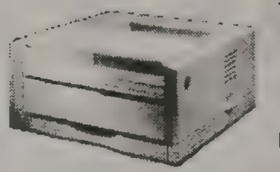

The HP LaserJet 4P Printer features true 600 x 600 dpi printing. That's four times the resolution of conventional 300 dpi printers! Plus, this compact printer comes with 45 built-in scalable typefaces, enhanced HP PCL5 for seamless compatibility with the HP LaserJet 4 printer, and 2 MB of standard memory (expandable to 26MB). For a powerful printing solution that doesn't take up a lot of space, the HP LaserJet 4P is the smartest choice on the market!

For the PC

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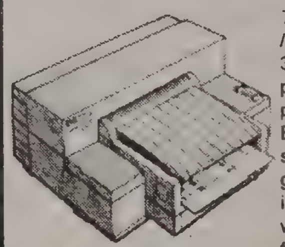

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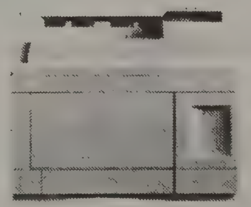

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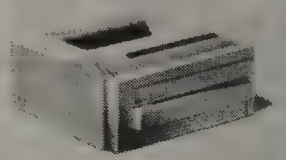

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For the PC

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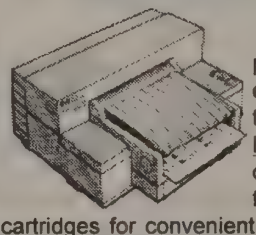
HP DESKWRITER / DESKJET 560C INKJET PRINTER



Using an advanced color printing system with HP's exclusive built-in ColorSmart technology, the new DeskJet / DeskWriter 560C delivers optimal color output. Also features resident dual cartridges for convenient black-and-color printing at the same time, clear 600 x 300 dpi black printing, and a variety of internal and scalable fonts!

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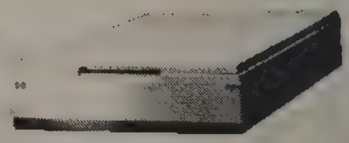

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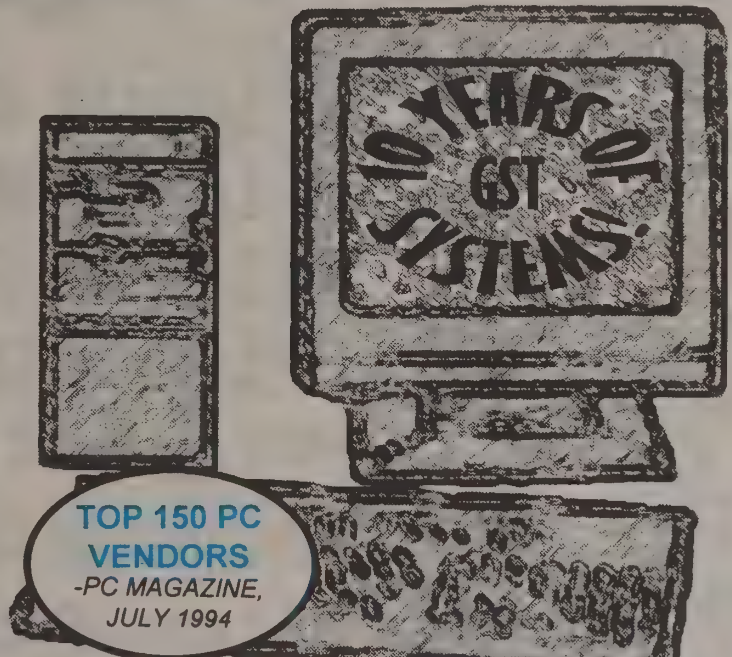
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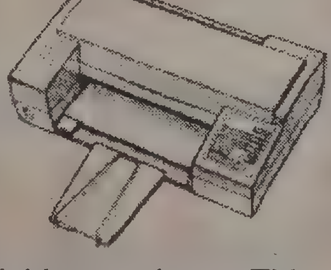

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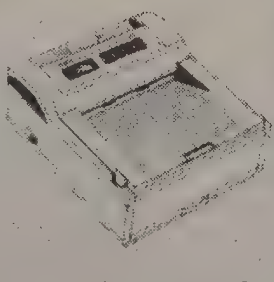

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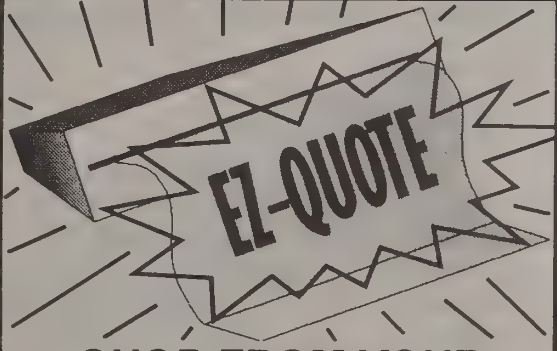

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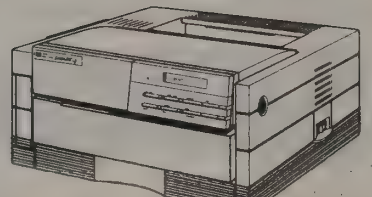

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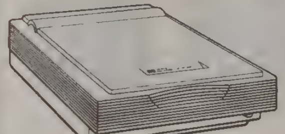
HP ScanJet IICX scanner IOHP019	$885



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Continued from page 132

BULLETIN BOARDS cont.

[Exp. #126.]

Servant Christian BBS. (310)371-2770, 371-3130, 371-0251. 14,400. Three lines. A modem ministry for both Macintosh and Windows users. [Exp. #128.]

South Bay Apple Computer Club BBS. (310)538-1913. 8-N-1, 24 hrs., 14,400. Apple II support and free Internet access. No fee. [Exp. #128.]

South Bay Apple Mac User Group BBS. (310)792-8083, 792-0264. 24 hrs., 300–9600. FirstClass. Administrator: Dr. Dave. [Exp. #128.]

The Spider's Web BBS. (310)416-9901. Games, recovery and 12 step msg. areas, BikeNet, ecology, spirituality, science and more. Free. [Exp. #127.]

Starfleet HQ II BBS. (310)422-8178. 8-N-1, 24 hrs., 300–28,800. Online games, VNET and other networks, Star Trek news/discussions. No fees. Sysop: Rodney Palmer. [Exp. #128.]

Terminal Fantasies. (310)915-6135: 14,400. Eight nodes, full Windows multitasking, gigs of shareware, thousands of GIFs, email, and more. [Exp. #126.]

Upper Transylvania BBS. (310)515-6843, 515-6953. 24 hrs., 1200–14,400 Seven CDs online, Christian, family-oriented fun for the PC user. Free. Sysop: Ron Hoffman. [Exp. #127.]

Xchange-Net. (310)452-3374. 8-N-1, 300–9600+. All classified ads; a swap-meet of detritus, flotsam, scrap, and anything this side of Jupiter. Free. Sysop: Rex Brains. [Exp. #127.]

619

PD-SIG BBS. (619)749-2741. 8-N-1, 24 hrs., 28,800. SIGs for most all computer types, download first call. Free, open system. Sysop: B.J. Nash. [Exp. #128.]

714

1% Homeseller BBS. (714)990-4802. 8-N-1, 24 hrs., 2400/14,400. Homes for sale in Southern California. Free. [Exp. #128.]

Alzheimer's BBS Of O.C. (714)731-3045. 8-N-1, 24 hrs., 2400. Day care, support groups, respite care services, text files. Free. Sysop: Vladimir Ostapowicz. [Exp. #128.]

The Aquarium/2. (714)434-1880. 8-N-1, 24 hrs., 300–28,800. OS/2, play-by-mail games, CD-ROM, multinode. Free. [Exp. #128.]

The Big Blue Mac. (714)493-4779. 8-N-1, 24 hrs., 1200–14,400. Internet, Intelec, and Rime conferences; IBM and Mac file bases. [Exp. #128.]

Bits And Bytes Of Orange. (714)921-0480, 921-0484 (28.8), 921-0587 (14.4), 921-0591 (14.4 & 2400). 24 hrs., 2400–28,800. 9+GB of shareware, games, email, adult section, and USA Today. Sysop: Barly Redstar. [Exp. #127.]

Calypso Online Services. (714)366-1355. 24 hrs., 28,800. 25 lines. An exciting new board including Internet and adult files. Free trial period/subscription. [Exp. #126.]

Cloud Lake BBS. (714)768-3585. 8-N-1, 24 hrs., 2400–28,800. 30,000+ files: woodcarving, Windows, DOS, games, astronomy, gardening, programming, business, and more. Sysop: Ed Barnes. [Exp. #128.]

CWI-BBS. (714)870-1033. 8-N-1, 24 hrs., 2400–14,400. Entire CWI disk catalog plus six CD-ROMs. Free 30-min. browse. [Exp. #126.]

The End BBS. (714)979-5233. Commodore 64/128, mail, files, online games. No fee. Sysop: Bob Blakeley. [Exp. #126.]

Free Money Manager BBS. (714)642-7627. 8-N-1, 1200/2400/9600/14,400. Free money manager files, online support. No fees. [Exp. #128.]

Global BBS. (714)373-1544. 24 hrs., 300–14,400. Political forums and organizations, worldwide VirtualNET, backpacking forums. No fees. Sysops: Chris and Jarome. [Exp. #126.]

Graphics Development Association. (714)651-1812. 8-N-1, 24 hrs., 14,400. Graphics, BMP, adult GIF, CAD, POV, ANSI, PCX. Free and subscription. [Exp. #128.]

Imagine-NET. (714)660-7738. 8-N-1, 24 hrs., 14,400. First Class Mac/Windows BBS, OneNet, four user groups, shareware. Free. Sysop: Douglas Nottage. [Exp. #127.]

InfoMat BBS. (714)492-8727. 24 hrs., 14,400. Features Electric Shorts online computer game reviews, type "readroom" at prompt. [Exp. #127.]

MacShak BBS. (714)373-0656. 24 hrs., 2400. Newly expanded Mac, amateur radio, consumer, and adult interests. Sysop: Dude B Narley. [Exp. #126.]

Matching Services, Inc. (714)840-5380. 8-N-1, 24 hrs., 2400–14,400. Search for mate by age, etc. Online photos. 1-900-844-6787,,,, 2222222222. $.99/min. Sysop: Jerry Seehof. [Exp. #127.]

The Midnight Mission BBS. (714)848-6808. 8-N-1, 24 hrs., 1200–14,400. Large game and XX GIF file areas. Full access with call back. Sysop: Marty Strech. [Exp. #128.]

The Midnight Unicorne Tavern. (714)572-6155. 8-N-1, 24 hrs., 2400–28,800. Medieval themes, msgs., OS/2 and DOS file and tech support. CHAINMAIL and FidoNet. Free. Sysop: Morgan Blackthorne. [Exp. #128.]

Mission Online. (714)258-0707. 24 hrs., 28,800. Multiline, RIP CD library, forum for programmers and processing professionals. Sysop: Kurt Steffien. [Exp. #128.]

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USER GROUPS

AMIGA

Amiga Users Group Of Long Beach. Meetings: 1st Thurs., 7:00 pm, Fire Station Bldg., 5373 E. Second St., Belmont Shores. All persons with an interest in the Amiga computer welcome. Free. [Exp. #131.]

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wednesday, 7:30 pm. Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Super SIGs, PD disks. Call: Gene Edwards, (213)384-8711. LAAUGLine BBS: (213)387-1002. [Exp. #129.]

SFVAUG—San Fernando Valley Amiga User Group. Meetings: 2nd Tues., 7:00 pm, "The Meeting Place" off the Food Court in Fallbrook Mall. Continuing the exploration of the Amiga in the area's most active Amiga Orphan support group. Call: Ernie, (805)526-8252. [Exp. #130.]

APPLE

Champions Of The Mac Proletariat (CHOMP). Meetings: 4th Thurs., 7:30 pm, Cal Poly Pomona. Question and answer, raffle of useful software, opportunity to purchase disks. Call: Craig Richards, (909)985-7385 or Mitch Cohen, (909)598-5766. [Exp. #129.]

Original Apple Corps. Meetings: 2nd Sun., West LA area. Apple II and Mac user group. Support for beginners through experts. Call: Fred Duffy, (310)450-3336. [Exp. #131.]

ATARI

All Computer Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Fullerton Savings, 12860 Euclid Ave., Garden Grove. Supporting Atari, Macintosh, PC, and other computer systems. Call: (714)960-6111. [Exp. #130.]

ATESIG—Atari 8-Bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative user group for model railroad applications. Call: (310)430-5433. [Exp. #130.]

South Bay All Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, VFW Hall, 1865 Lomita Blvd., Lomita (1 block W of Western). All skill levels. Call: Danny or Mary, (310)834-0040. [Exp. #128.]

COMMODORE

Commodore Technical Users Group (C=TUG). Meetings: 4th Sunday, 1:00 pm, Senior Citizen Center, 170 S. Olive St., Orange. Public domain library, documents library, and magazine. Software and hardware help. Call: Daniel, (714)871-7570. [Exp. #128.]

South Bay Commodore Users Group. Meetings: 3rd Thurs., 7:00 pm, SCE Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor), conference room. Support for 64/128 computers; receive or exchange information on programs, applications, or hardware. Call: (310)324-8357. [Exp. #130.]

CORELDRAW

CorelDRAW User Group (independent). Meetings: 2nd Mon., 7:30 pm, Jolly Roger Hotel, 2904 Washington Blvd., Marina Del Rey. Speakers on design and printing, CorelDRAW tutorials, and favorite shareware. Call: Michael, (310)545-1478. [Exp. #130.]

EPSON

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FINALE

Finale User Group (FUGUE). Meetings: 4th Wed., 7:30 pm, Electronic Music Box, 14947 Ventura Blvd., Sherman Oaks. Tips and problem solving. Bring files on disk. SIG of LAMG. Call: Bonnie Janofsky, (213)658-5997. [Exp. #131.]

IBM & COMPATIBLES

All Computer Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Fullerton Savings, 12860 Euclid Ave., Garden Grove. Supporting Atari, Macintosh, PC, and other computer systems. Call: (714)960-6111. [Exp. #130.]

Cedar Village Users Group. Meetings: 2nd Sun. (3rd if 2nd is holiday), 3:00 pm, Speakers, software, BBS, and more. Contact: Tony Barnes, P.O. Box 1141, Bloomington, CA 92316, or modem (909)356-1269. [Exp. #131.]

Greater South Bay PC User Group. Meetings: 2nd Thurs., 7:30 pm, Torrance Recreation Center located behind the main city library, Torrance. Visitors welcome. Email: (310)335-2799. [Exp. #131.]

Long Beach IBM PC And Compatibles Users Group. Meetings: 3rd Wed., 7:00 pm, Masonic Temple, 5155 E. Pacific Coast Hwy., Long Beach. Novice and experienced welcome, BBS, public domain library, newsletter, SIGs. $25/year, $35 for families. Call: Jim Wells, (213)439-7114. [Exp. #131.]

Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School, 4401 Elenda St., Culver City. Presentations from prominent software and hardware developers and Q&A sessions. Call: (310)471-2726. [Exp. #130.]

Orange County IBM PC Users Group. Meetings: 2nd Tues., 6:30 pm. Speakers, software, newsletter, BBS. Open to public, all welcome. Call: (714)990-0580. [Exp. #130.]

Pasadena IBM Users Group. Meetings: 3rd Wed., 7:00 pm, 2184 N. Lake Ave., Altadena. Speakers on hardware/software, SIGs, library, newsletter, and BBS. Call: Steve Bass, (818)791-1300. [Exp. #130.]

San Bernardino PC Users Group. Meetings: 1st Wednesday, Jack Brown Hall, Rm. 129, Cal State University, San Bernardino. Specializing in IBM and compatibles. Free admission. Call: Arthur Saltzman, (909)880-5755. [Exp. #127.]

Software Users Group Of O.C. Meetings: monthly in Irvine. Serves IBM compatible users who are new to computers. Call: (714)721-8751 (modem). [Exp. #129.]

South Bay All Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, VFW Hall, 1865 Lomita Blvd., Lomita (1 block W of Western). All skill levels. Call: Danny or Mary, (310)834-0040. [Exp. #128.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)494-8675. [Exp. #131.]

TUG-NET. Meetings: Every Thurs., 7:00 pm, Glendale Federal Bank, 7119 Topanga Cyn., Canoga Park. Ample parking. Call: (818)249-1629. [Exp. #126.]

Valley Computer Club. Meetings: 1st Wed., 7:00 pm, Burbank Board of Realtors Bldg., 2006 W. Magnolia, Burbank. BBS, PD library, SIGs, newsletter. All welcome. Fee, $4. Call: Estella McClintock, (818)848-1948 or Grayce Hruda, (818)842-3707. [Exp. #131.]

Valley IBM Compatible Uses Group (VICUG). Meetings: 3rd Fri., 7:00 pm, State Bldg., 6150 Van Nuys Blvd., Van Nuys. Call: Harry Tischler, (818)997-1470. [Exp. #131.]

KAYPRO

KAYOS Kaypro User Group. Meetings: 4th Mon. of even months, 6:00 pm, El Segundo Library, Mariposa and Richmond streets. Call: (310)379-8339. [Exp. #131.]

MACINTOSH

All Computer Association Of Orange County. Meetings: 2nd Sun., 1:00 pm, Fullerton Savings, 12860 Euclid Ave., Garden Grove. Supporting Atari, Macintosh, PC, and other computer systems. Call: (714)960-6111. [Exp. #130.]

Champions Of The Mac Proletariat (CHOMP). Meetings: 4th Thurs., 7:30 pm, Cal Poly Pomona, grey building near administration building, rm. P2-7. Call: Craig Richards (909)985-7385 or Mitch Cohen, (909)598-5766. [Exp. #129.]

Los Angeles Macintosh Group (LAMG). Meetings: 3rd Tues., 7:30 pm, Dept. of Water & Power, 111 N. Hope St. Free meeting, everyone welcome. Call: (310)278-LAMG. [Exp. #128.]

Original Apple Corps. Meetings: West LA area. Apple II and Mac user group. Support for beginners through experts. Call: Fred Duffy, (310)450-3336. [Exp. #128.]

South Bay Apple Mac User Group. Meetings: Last Wed., 8:00 pm, El Camino College, MCSC Rm. 100, 16007 Crenshaw Blvd., Torrance. Newsletter, PD library, demos, and raffles. Call: (310)644-3315. [Exp. #131.]

Southern California Macintosh Owners/Users Group (SMOG). Meetings: 2nd Sat., 10:00 am, Western Digital Bldg., off 405 Freeway at Irvine Center Dr., Irvine. Speakers, product demos, Q&A, PD disks. All skill levels. Call: Dani Maloy, (909)698-7737. [Exp. #131.]

West Orange County Macintosh User Group (WOCMUG). Meetings: last Tues., 7:00 pm, Emerson Elementary School, 2625 Josie, Long Beach (NE corner of Palo Verde and Willow). Come and join with other Mac users to share knowledge and experiences. Call: Lynn Goodrich, (714)892-8910; or Tony Muller (310)493-1240. [Exp. #127.]

POWERBUILDER

Los Angeles PowerBuilder User Group. Meetings: 1st Tues., 6:00 pm, Sony Entertainment, 3400 Riverside Dr., Burbank. [Exp. #131.]

PROGRAMMING LANGUAGES

The Software Toolsmiths. Meetings: Last Sat., 10:00 am, Joslyn Center, 339 Sheldon St., El Segundo (except Nov. and Dec.). Discussions and tutorials on programming: C++, Forth, J, Smalltalk, algorithms, etc. Neophytes welcome. Call: John LuValle, (818)797-1820, or Howard Rogers, (310)532-3342. [Exp. #131.]

UNIX

UUASC, The UNIX User's Association Of Southern California. Meetings: 2nd Mon., 7:00 pm, New Horizons Computer Learning Center, 1231 E. Dyer Rd., Santa Ana. Geared to professional and amateur users of all flavors of UNIX, including Linux. Call: Larry, (714)526-4347. [Exp. #130.]

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Mid-tower case, 200W UL power supply (case not shown)
Sony 33A double-speed internal CD-ROM drive and interface
MS-DOS 6.2X with disks & concise guide

NOTE: This device has not been approved by the Federal Communications Commission. This device is not and will not be offered for sale or lease, sold or leased, untill the approval of the FCC has been obtained. We project that FCC certification will be granted in late August.

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Intel Pentium 60 or 66MHz CPU & Intel Mercury chip set
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P5T upgradeable; full green function motherboard
540MB IDE hard drive; 1.44MB floppy drive
32-bit PCI hard drive controller
2 serial, 1 parallel, 1 game ports; floppy controller
32-bit PCI video card w/ 64-bit accelerator & 1MB DRAM (Diamond)
14" Shamrock SVGA N/I monitor (1024x768, .28dp)
101-key enhanced keyboard
Mini-tower or desktop case, 200W UL power supply
Sony 33A double-speed internal CD-ROM drive and interface
MS-DOS 6.2X with disks & concise guide

Pentium 60MHz/PCI	**$ 2298**
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Intel 486DX2/66 or 486DX4/100MHZ CPU
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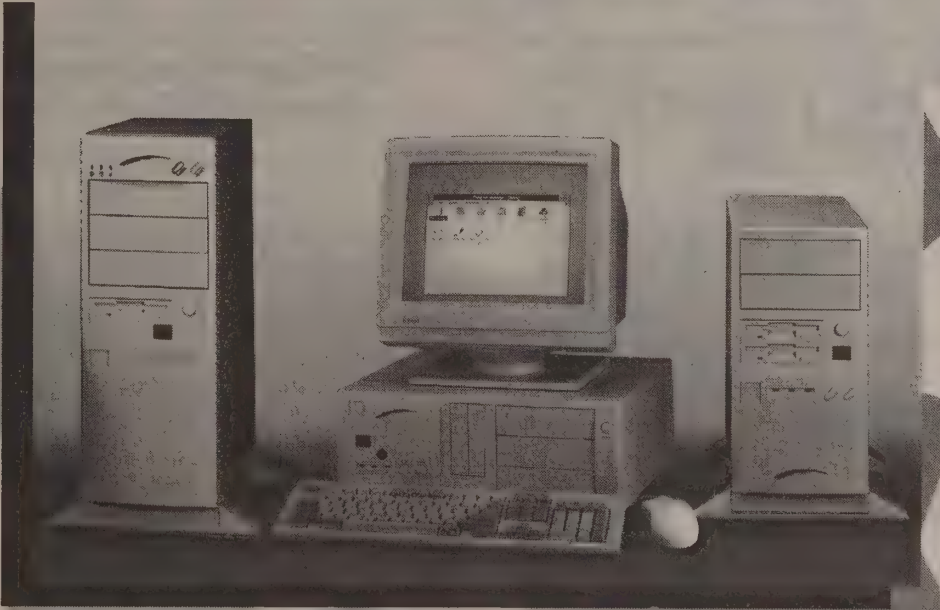
420MB IDE hard drive; 1.44MB floppy drive
32-bit VESA local bus hard/floppy drive controller
2 serial, 1 parallel, 1 game ports
32-bit VESA local bus video card w/ accelerator & 1MB DRAM
14" Shamrock SVGA N/I monitor (1024x768, .28dp)
101-key enhanced keyboard
Mini-tower or desktop case, 230W UL power supply
Sony 33A double-speed internal CD-ROM drive and interface
MS-DOS 6.2X with disks & concise guide

486DX2/66	**$ 1438**
486DX4/100	**$ 1758**



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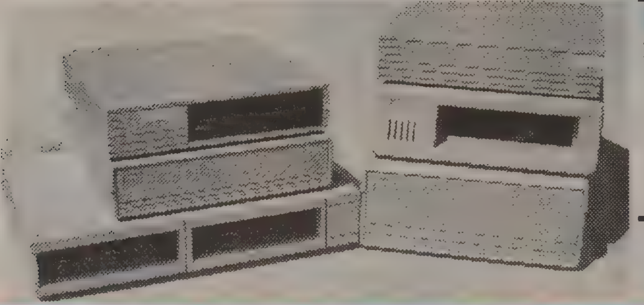

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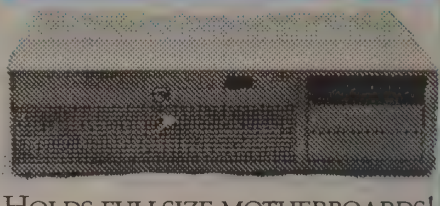

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Mini Tower Carry Case
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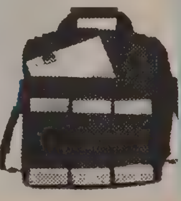

Zippered Exterior pocket 12" x 12" x 1". Carry handles & Shoulder Strap. Greenish color. Originally for Mitsubishi.

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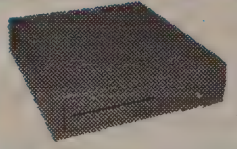

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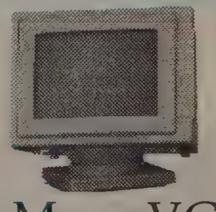

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Salt Shaker BBS. (714)850-1539. ChristNet, Internet, doors, files, Christian/family oriented. Basic services free. Sysop: Jeffrey Haney. [Exp. #128.]

Sherlocktron. (714)492-0724. 8-N-1, 24 hrs., 2400. Sherlock Holmes BBS with lists of societies, publications, and purveyors. Sysop: Willis G. Frick. [Exp. #126.]

Software Gallery BBS. (714)721-8751. 2400–19,200. Largest file base in Calif. Games, utils, Win, DOS, CD-ROMs. Free access. Sysop: Joseph Brian. [Exp. #126.]

Viewlink BBS. (714)650-4612. 8-N-1, 24 hrs., 14,400. Latest shareware, hottest adult GIFs, temp jobs. 28¢ per hour. Sysop: Terry Andrews. [Exp. #126.]

Vivid Image BBS. (714)669-8823. 8-N-1, 24 hrs., up to 14,400. IBM-based, games, files, doors, CD-ROMs, classified, matchmaking. Free access. Sysop: Veno Dos Santos. [Exp. #128.]

805

Desert Jewel "Online" Mall And BBS. (805)397-2063. Four lines. "Online" shopping mall, PC and network support, Internet email and forums, 1GB of files. Sysop: Jerry Bransom. [Exp. #127.]

818

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DZBO's Monitor 1. (818)989-3286. 24 hrs., Graphics, games, virtual reality, classified ads, messages, and more. Free. Sysop: K. D. Dizibio. [Exp. #127.]

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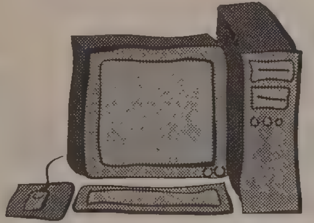

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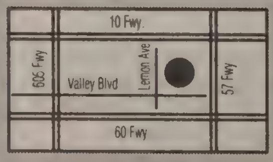

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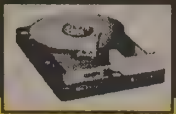

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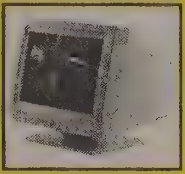

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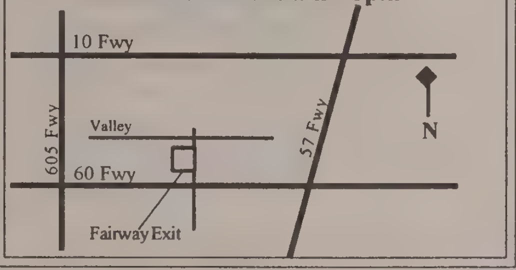

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Telecomuting *continued from page 46*

South Americans with competitive skills.

There is more than one telecommuting analyst with a great fear that today's middle class American will be forced into competition with tomorrow's information piece-worker and that—as a result—wages and benefits will inevitably be harmonized downward.

> The percentage of business organizations that support telecommuting among their employees has increased from 7 or 8% in the late 1980s to between 18 and 20% in 1993.

Speaking more psychologically and metaphorically, many critics of the information superhighway see it as a step toward virtual reality—which is another way of describing a step away from actual reality. They foresee a world in which more and more people are more and more isolated in their air-conditioned telematic workstations. They are isolated not only from flesh-and-blood contact with other people, but from contact with the planet itself. There is the potential not only for rampant disease as we lose our resistance to the planet's germs, but for individual and mass insanity as we lose contact with the boundaries of day-to-day life.

Critics also argue that a mass shift from our present styles of work to a telecommuting-intensive mode will create pressures for change on our political systems. But who can say which direction these pressures will force us?

Perhaps a global government will emerge, and that could certainly be a good thing. But to the extent local interests, culture, and values are submerged in the global hierarchy, much that is of value could be lost. What's more, the economic and political incentives associated with providing technology and other development to Third World nations—necessary to feeding and expanding the telecommuting mode of operation—could prove strong enough to overcome other concerns, such as self-determination, peace, even democracy itself.

Going another step, it's possible to envision that as communications technology supplants our present-day modes of social interaction—visiting, talking face to face, and so forth—it's likely to foment changes in the human race. We have already evolved from hunter-gatherers to toolmakers, from tribal nomads to city dwellers. If those who would be more successful in this brave new world are not the same ones as will be successful in our present society, how might their differences impact our immediate future or the future evolution of the human race?

Clearly, these questions are not going to be answered quickly. But the dialog has been opened. Anyone with ideas or information to contribute to this discussion is welcome to write me or email me, and in turn I'll keep you posted on important developments in this area. ■

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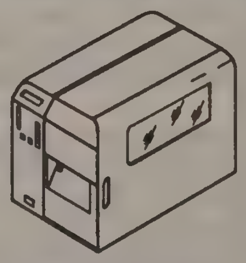

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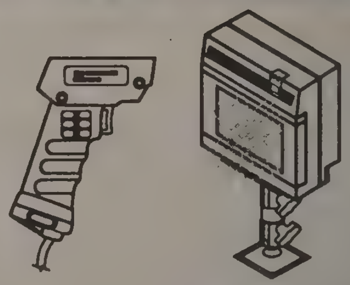

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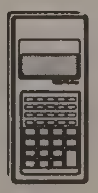

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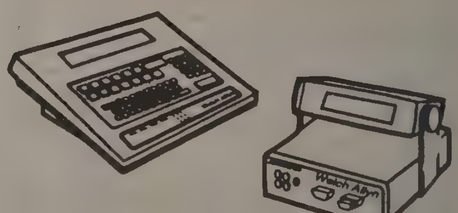

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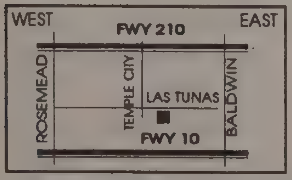

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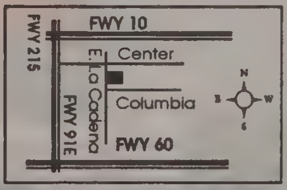

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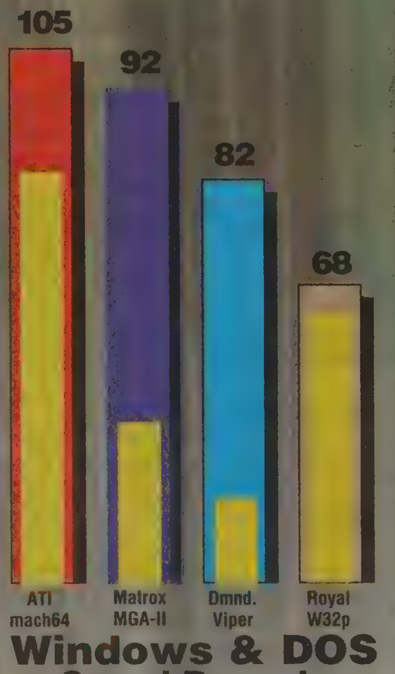

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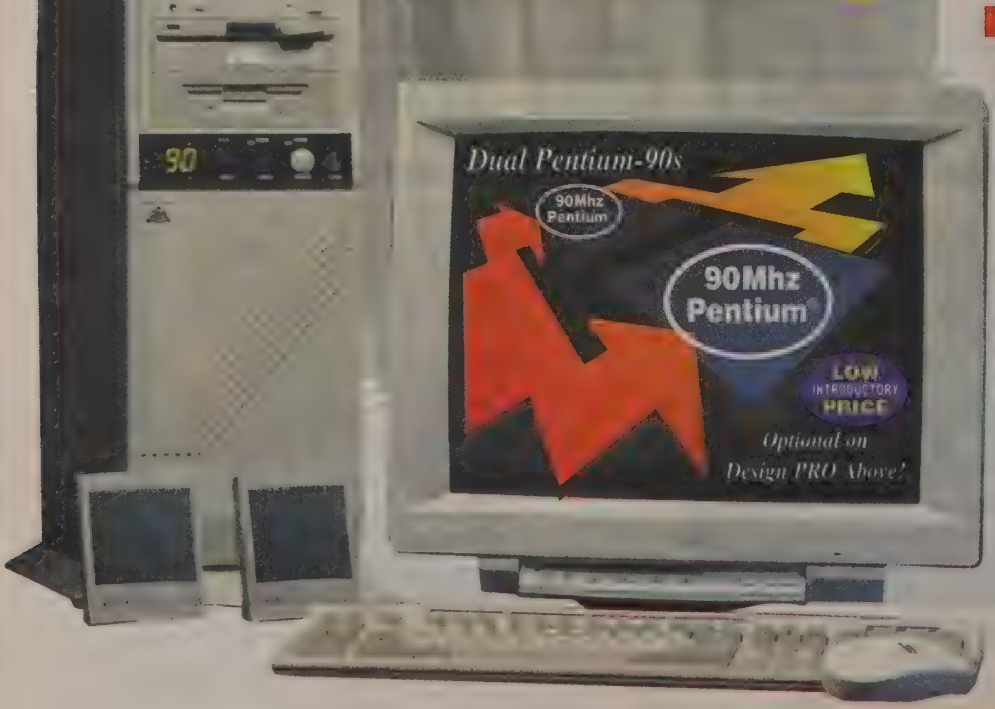
Source. ZD Labs WinBench 3.11 & PC Bench 7.01. 🟨 DOS



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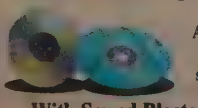

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The Legacy Of Gary Kildall

continued from page 26

Life At Digital Research

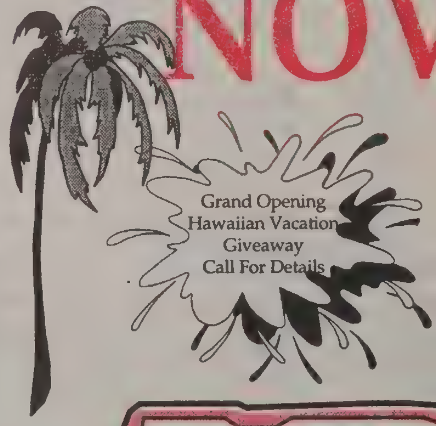
You had to be around back then to appreciate the true magnitude of the contributions made by Gary and his company, Digital Research Inc. (first called "Intergalactic Digital Research," now part of Novell). DRI introduced operating systems with windowing capability, preemptive multitasking, and menu-driven user interfaces years before Microsoft did Windows. Digital Research operating systems were the first to take advantage of the 386's extended memory space and built-in protection mechanisms—years before Microsoft or IBM attempted to do the same.

Gary fostered a work environment at DRI in which good, creative people could set about the task of revolutionizing the world, and enjoy themselves in the process. He and his people implemented the first diskette track buffering schemes, read-ahead algorithms, disk-file and file-directory caches, and RAM disk emulators ever for micros. But having fun counted, too. When the basement of one of the DRI buildings was gutted and a new cement subfloor was poured in preparation for a new VAX computer center, the whole gang held roller-skating parties downstairs every night after work.

Back before the introduction of the IBM PC, Digital Research operating systems supported protocols for memory allocation, file sharing, process switching, interprocess communications, and peripheral management. When Microsoft bought the rights to QDOS (an unauthorized "quick and dirty" knockoff of CP/M) from a company called Seattle Computer Products, renamed it MS-DOS, and sold it to IBM for use with the PC, these protocols were removed. Not having worked with operating systems more advanced than 8-bit CP/M, Microsoft's chief OS programmers couldn't understand what these functions were for. To this day, Microsoft is scrambling to retrofit DOS and Windows with capabilities they unwittingly removed when they decided to "simplify" Gary's original design.

> **To receive international acclaim and obscene wealth for your work, first you have to want it. That wasn't Gary; that's not what spurred him on.**

But perhaps Gary's most profound contribution to the computer industry was the creation of the first practical open-system architecture. All previous computer software had been targeted toward specific hardware environments. Gary isolated all the system-specific hardware interface code needed by CP/M within a small set of "basic I/O system" routines. As a result, the OS and all applications programs were fully machine independent. This one innovation caused the creation of the third-party software industry, since it expanded the potential market for each developer's



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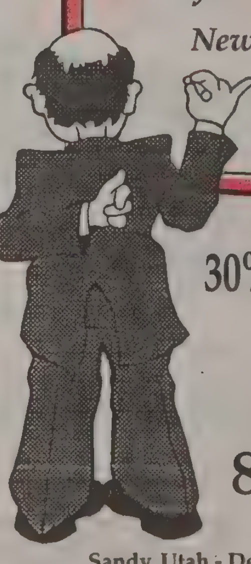

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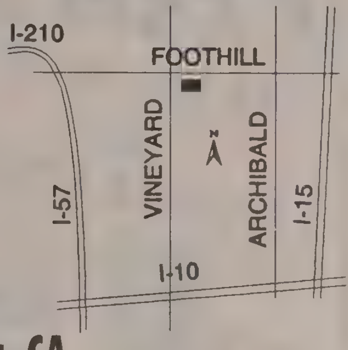

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- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.44MB Floppy Drive
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket

486SX-33	**$325**
486DX33/40	**$340**
486DX2-66	**$495**
486DX4-100	**$860**
Pentium-66 PCI & VESA	**$1150**

486DX-33/40 VESA

either system $1170

- Intel/AMD 486DX-33/40
- VESA Motherboard (SIS Chipset)
- 4MB RAM, 256KB Cache
- 340MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2MB & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

486DX2-66 VESA

$1250

- Intel 486DX2-66 CPU
- VESA Motherboard (SIS Chipset)
- 4MB RAM, 256KB Cache
- 420MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

486DX4-100 VESA

$1620

- Intel 486DX4-100 CPU
- VESA Motherboard (SIS Chipset)
- 4MB RAM, 256KB Cache
- 420MB Hard Drive
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

486DX2-66 VESA

$1869

- Intel 486DX2-66 CPU
- VESA M'board (SIS C. S.)
- 8MB RAM, 256KB Cache
- 420MB Hard Drive
- 2X CD-ROM Drive
- 16 Bit Sound Card w/CDTitle Software
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accel. w/1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
- Mid Tower Case w/250W UL, CSA Pwr. Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

486DX4-100 VESA

$2220

- Intel 486DX4-100 CPU
- VESA M'board (SIS C. S.)
- 8MB RAM, 256KB Cache
- 420MB Hard Drive
- 2X CD-ROM Drive
- 16 Bit Sound Card w/CDTitle Software
- 32 bit Local Bus 16.7M Color SuperVGA Graphics Accel. w/1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
- Mid Tower Case w/250W UL, CSA Pwr. Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

486DX2-66 PCI

$1625

- Intel 486DX2-66 CPU
- PCI Local Bus Motherboard
- 4MB RAM, 256KB Cache
- 420MB Hard Drive
- PCI Local Bus, W32i, Hi-Color SuperVGA Graphics Accel. w/1MB (2MB Opt)
- PCI Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
- Mid Tower Case w/250W UL, CSA Pwr. Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

Pentium-60 PCI

$1890

- Intel *Pentium*-60MHZ CPU
- PCI Motherboard
- 8MB RAM, 256KB Cache
- 420MB Hard Drive
- PCI Local Bus 16.7M Color SuperVGA Graphics Accelerator with 1MB (2MB Opt)
- Local Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 14" NI SuperVGA Monitor with Tilt & Swivel Base (1024 x 768, .28mm dp)
- Mini Tower Case with 230 Watt Power Supply
- Green PC ZIF Socket
- 101 Key Keyboard
- Mouse & Mouse Pad

Pentium-66 PCI/ 90 PCI & VESA

$2010/2545

- Intel *Pentium*-90MHZ CPU
- PCI Local Bus Motherboard
- 8MB RAM, 256KB Cache
- 540MB Hard Drive
- PCI Local Bus, W32i, Hi-Color SuperVGA Graphics Accel. w/1MB (2MB Opt)
- PCI Bus IDE Controller
- 2 Serial/Parallel/Game Port
- TEAC/NEC 1.2 & 1.44MB Floppy Drives
- 15" NI SuperVGA Monitor with Tilt & Swivel Base (1280 x 1024, .28mm dp)
- Mid Tower Case w/250W UL, CSA Pwr. Supply
- Green PC ZIF Socket
- 101 Key Keyboard
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Smartlink/GVC 14.4KBPS v.32 Fax/Modem (int.)	99
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Smartlink 96/24KBPS Fax/Modem (int.)	39
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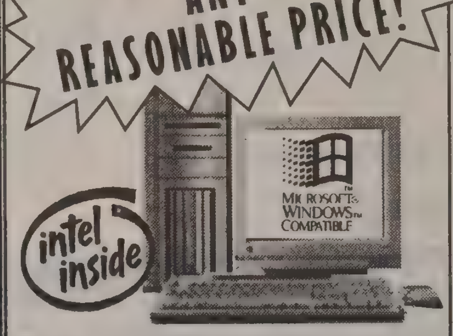

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486SLC-66MHz 64K C. Ext. VLB w/1MB RAM	367
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486DX-33MHz 256K C. VLB w/1MB RAM	329
486DX2-50MHz 256K C. VLB w/1MB RAM	359
486DX2-50MHz 256K C. PCI w/1MB RAM	437
486DX2-66MHz 256K.C PCI w1MB RAM	657
486DX2-66MHz 256K C. VLB w/1MB RAM	457
486SLC-75MHz 256K.C VLB w/1MB RAM	508
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486DX4-100MHz PCI/VLB 256K C. w/420MB	$1597
486DX2-66MHz PCI/VLB 256K C.w/420MB	$1157
486DX2-50MHz PCI/VLB 256K C. w/420MB	$1077
486DX-33MHz PCI/VLB 256K C. w/420MB	$1047

EISA/VLB

486DX2-66MHz EISA VLB 256K C. w/420MB	$1157
486DX2 50MHz EISA VLB 256KC.w/420MB	$1077
486DX-33MHz EISA/VLB 256K C.w/420MB	$1047
Green PC 486DX2-66MHz VLB 256K C. w/420MB	$1027
Green PC 486DX-40MHz VLB 256K C. w/420MB	$988

VESA/LB

486DX2-66MHz VESA LB 256K C. w/210MB	$1047
486DX2-50MHz VESA LB 256K C. w/210MB	$957
486DX-40MHz VESA LB 256K C. w/210MB	$957
486DX-33MHz VESA LB 256K C. w/210MB	$937
486SX-33MHz VESA LB 256K C. w/210MB	$897

PENTIUM

Pentium 90MHz PCI 256K C.	$2377
Pentium 66MHz PCI 256K C.	$2127
Pentium 66MHz VLB 512K C.	$2047
Pentium 60MHz VLB 512K C.	$1897

8MB RAM, PCI Video & Cntrl., 1.4 FD, 420MB IDE, 15" SVGA NI Monitor

DX/DX2 EISA LB

w/DX-33MHz CPU	$1137
w/DX2-50MHz CPU	$1167
w/DX2-66MHz CPU	$1247

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IBM SLC/VLB

IBM 486SLC-75MHz VLB 256K C. w/170MB	$1077
486SLC-66MHz VLB 64K C. w/170MB	$917
486SLC-66MHz ISA 16K Int. w/170MB	$897
486SLC-50MHz ISA 16K Int. w/170MB	$867
486SLC-33MHz ISA w/170MB	$797

ISA/DLC

486DLC-40MHz VLB 64KC. w/170MB	$887
486DLC-40MHz 64KC. w/170MB	$857
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386SX-40MHz w/170MB	$759

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Concentrator, UPS, LANSoftware	CALL

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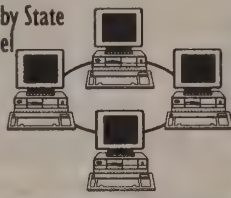
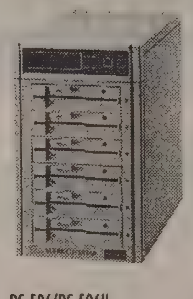


• THE SUPER COPYSTAR • DISKETTE DUPLICATORS/ FORMATTERS



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DC-3010/DC-3010H
3.5" TARGET FDDx10

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Hi-Com 14" 1024x768 .28dp Interlaced	219
Shamrock 14" (1024x768) .28DPI N-I	239
Shamrock 15" (1280x1024) .28DPI N-I	337
Sceptre CD-615 15" Low Radiation N-I	369
Sceptre CD-615GL 15" Energy .28dp N.I.	437
Kenitec 17" 1280x1024 .28dp N.I.	649
Shamrock 20" 1280x1024 .28dp N.I.	1179

• MOTHERBOARDS •

Intel Pentium/PCI 90/100MHz 256K C.	$479
Intel Pentium/PCI 60/66MHz NCR SCSI 256K C.	397
Intel Pentium/PCI 60/66MHz 256K C.	317
Forex Pentium/VLB 60/66MHz 512K C. (Made USA)	265
PCI/VLB 486-66/75/100MHz 256K C. (Made USA)	188
EISA/VLB 486-33/40/50/66MHz 256K C.	168
VLB/ISA 486-33/40/50/66MHz 256K C. Opti	97
CPU Pentium/DX 66/50/40/33MHz	CALL
Pentium/PCI 256K C. w/90MHz CPU	1257
Pentium/PCI 256K C. w/66MHz CPU (Made USA)	1017
Pentium/VLB 512K C. w/66MHz CPU (Made USA)	927
Pentium/VLB 512K C. w/60MHz CPU (Made USA)	797
Forex ISA/VLB Green PC w/DX2-66MHz 256K C.	347
Forex ISA/VLB Green PC w/DX2-50MHz 256K C.	259
Forex ISA/VLB Green PC w/DX-40MHz 256K C.	259
VEGA ISA/VLB Green PC w/DX2-66MHz 256K C.	445
VEGA ISA/VLB Green PC w/ DX2-50MHz 256K C.	415
VEGA ISA/VLB Green PC w/DX-33MHz 256K C.	408
PCI/VLB Green 256K C. DX-33MHz CPU (Made USA)	308
PCI/VLB Green 256K C. DX-40MHz CPU (Made USA)	337
PCI/VLB Green 256K C. DX2-50MHz CPU (Made USA)	337
PCI/VLB Green 256K C. DX2-66MHz CPU (Made USA)	427
4PCI/3VLB 486DX4-100MHz 256K C.	837
VESA LB 486DX2-66MHz 256K C. w/P5 Socket	357
VESA LB 486DX2-50MHz 256K C.	259
VESA LB 486DX-40MHz 256K C.	259
VESA LB 486DX-33MHz 256K C.	229
VESA LB 486SX-33MHz 128K C.	197
IBM 486SLC2-75MHz VLB 256K C. w/P5 Socket	399
IBM 486SLC2-66MHz ISA 16K Int. w/Math Co.	235
IBM 486SLC2-66MHz VLB 64K Ext. w/Math Co.	255
IBM 486SLC-33MHz ISA w/CPU	97
Cyrix 486DLC-40MHz VLB 128K C. w/Math Co.	197
Cyrix 486DLC-40MHz ISA 128K C. w/Math Co.	177
386DX-40MHz w/128K C.	99
386SX-40MHz	77

• CD-ROM •

CD-ROM Single-Speed CM 205	$147
Panasonic CD-ROM Double Speed	177
Panasonic CD-ROM Double Speed w/16 bit Sound Card	257
NEC Triple Speed (OEM) CD ROM	307

• VIDEO •

MGP	$15
VGA 256K 16 Bit	35
Trident SVGA 512K	45
Trident SVGA 1MB	61
Cirrus Logic VLB 1MB 32 Bit Video	77
ATI Wonder XL24 1MB	107
ATI Wonder Mach 32-D 1MB 16 Bit	150
ATI Ultra Plus Mach 32-D 24 Bit 2MB	185
ATI Ultra Pro Mach 32-V 24 Bit 2MB	255
ATI Wonder Mach 32-D VLB 1MB	137
ATI Ultra Plus Mach 32-D VLB 2MB	197
ATI Ultra Pro Mach 32-V VLB 2MB	267
ATI Winturbo Mach 64-V VLB 2MB	317
ATI Ultra Plus PCI Mach 32-D 1MB	137
ATI Ultra Pro PCI Mach 32-V 2MB	270
ATI Winturbo PCI Mach 64-V 2MB	317
Diamond Stealth 24 VLB, S3 Chip, 1MB	160
Diamond Stealth Pro VLB 1MB VRAM up to 2MB	249
Diamond Speedstar Pro VLB 1MB	125
Diamond Stealth 32 PCI VLB w/2MB DRAM	419
Orchid Fahrenheit VLB 32 Bit 1MB exp. 2M	169
Spider PC II 64 Bit PCI 2MB	207
Spider PC II 64 Bit VLB 2MB	207
AT I/O (2S,1P,1G) Ports	10
AT IDE (Dual HD/FD Controller) w/Cable	10
AT Super IDE w/I/O (Dual HD/FD Controller)	15
14.4K Fax/Modem Internal	97
2400B Modem Internal	29
Mitsumi 101 Keyboard	19

• HARD DISK/TAPE BACKUP •

1.2MB FDD (5.25")	$47
1.4MB FDD (3.5")	37
1.2/1.4MB Dual FDD	105
2.88MB FDD (3.5")	79
130MB IDE (17ms)	165
170MB IDE (17ms)	177
210MB IDE (17ms)	187
290MB IDE (15ms)	227
345MB IDE (15ms)	237
420MB IDE (13ms)	247
540MB IDE (8.5ms)	335
1.08GB IDE (9ms)	647
1.08GB SCSI (9ms)	677
1.80GB SCSI (9ms)	967
Quantum 545MB IDE HDD	357
Quantum 1080S 1.08GB(9ms)	717
Quantum 1800S 1.8GB (9ms)	1098
Seagate 12550N 2.4GB (9ms)	1619
Micropolis 1926 2.4GB (9ms)	1467
Micropolis 1936 3.6GB (9ms)	CALL
120MB Tape Back-Up Int.	95
250MB Tape Back-Up Int.	168
525MB SCSI Tape Back-Up 200KB/Sec	468
2GB Data Tape Back-Up, SCSI-2 Interface (SONY)	798
8GB Tape Back-Up SCSI-2 Interface (SONY)	918

ALL SYSTEMS ABOVE INCLUDE:

- 4MB RAM of High Speed 70ns
- 1024 x 768 SVGA card
- 1.4MB Floppy Drive
- 1 Parallel, 2 Serial, 1 Game Port(s)
- 14" SVGA Color Monitor
- BTC 101 Key Enhanced Keyboard
- Desktop or Mini Tower Case w/Digital Display
- Serial Mouse

UPGRADES

VIDEO UPGRADE

Diamond Viper VLB 2MB VRAM	$345
PCI VGA Windows Accelerator	155
Diamond SpeedStar Pro VLB 1MB	89
Diamond Stealth 24VLB 1MB, S3 Chip	115
32-bit SVGA VESA LB Cntrl.	45
32-bit IDE VESA LB Cntrl.	19
PCI IDE Hard Disk Cntrl.	35

HARD DISK

	130MB	260MB
345MB IDE (15ms)	$77	$27
420MB IDE (13ms)	97	67
540MB IDE (8.5ms)	197	157
1.08GB SCSI (9MS)	587	547
170MB	27	
260MB	67	

MONITOR UPGRADE

Shamrock 14" N.I. 1024x768, .28dp	$57
Shamrock 15" N.I. 1280x1024, .28dp	147
Sceptre CC-615 15" Low Radiation, .28dp	189
Sceptre CC-615GL 15" Energy, .28dp	255
Shamrock 17" N.I. 1280x1024, .28dp	537

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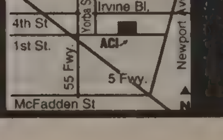

MasterCard
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programs by several orders of magnitude.

(Microsoft lifted the term "BIOS" for MS-DOS, but wrote the software to be machine-dependent anyway. Again, it wasn't until the concept of a "Hardware Abstraction Layer" was introduced for Windows NT in 1993 that Microsoft seemed to understand the philosophy behind Gary's original design.)

The list goes on. Gary developed an early computer-based arcade game and the first computer-controlled interface for video disks to allow automatic nonlinear playback—the precursor to today's interactive multimedia. When audio CDs were first introduced, Gary quickly recognized their potential as a high-capacity, low-cost distribution medium for software and digital data.

In fact, it was Gary who developed the file system and data structures needed for the world's first consumer CD-ROM, an electronic version of *Grolier's Encyclopedia*. He personally wrote the software that munged the original text database, built the cross-referenced index, and generated the final CD master. Gary also designed the user interface and wrote its hypertext-based data-retrieval engine—the first consumer software of its kind.

Ironically, many of the software techniques Gary pioneered more than a decade ago are just now being rediscovered. Apple and DEC are touting binary recompilation as a "new" technology for porting existing software to the PowerPC or Alpha architecture. Actually, DRI introduced an 8080-to-8086 binary recompiler in the early 1980s.

One of the more formidable challenges facing the personal computer and workstation industries today is the difficulty of supporting multiple CPU architectures in a heterogeneous environment. Yet way back in the early '80s one could sit down at a CP/M computer, insert a floppy disk, search its directory, edit and assemble a source file, and print out a listing, all without knowing (or caring!) whether the CPU inside the computer was a Zilog Z80; an Intel 8080, 8085, or 8086; or a Motorola 68000. If only today's systems were as simple and consistent to use!

Gary also did much to make computers accessible to the masses. Years ago he developed a commercial version of Logo because he thought children would be better off learning good software design methodologies from the start. Long before HyperCard, DRI software included a hypertext-based online help facility. And at a time when microcomputers appealed chiefly to a small cadre of hard-core technonerds, Gary was a host of *The Computer Chronicles*, a PBS television program that is still on the air.

The IBM PC, Or, "Gary Went Flying" Revisited

The *San Jose Mercury News* ran a page-one obituary after Gary's death that began with the observation: "but for a single failed business deal [Gary] might have enjoyed the wealth and fame of Bill Gates."

I disagree. To receive international acclaim and obscene wealth for your work, first you have to want it. That wasn't Gary; that's not what spurred him on. His early systems were developed not for their commercial value but so that he

MEMORY

DON'T RELY ON YOUR MEMORY, RELY ON OURS

CACHE MEMORY

	15NS	20NS	25NS
8Kx8	5 50	5 00	4 50
32Kx8	8 25	7 75	7 00
64Kx1	10 25	9 00	8 00
64Kx4	11 00	9 00	8 00
16Kx4	8 00	7 00	6 00
128Kx8		42 00	32 00

INDIVIDUAL D-RAM CHIPS

	60NS	70NS	80NS	100NS
1Megx1	7 36	7 25	6 75	4 95
1Megx4	35.00	29 00	27 00	
1Megx4(Z)	27.00	25.00	23.00	
256 x 4	7.95	6.95		
256 x 4 (Z)			11.95	10.95
256 x 1	3.00	2.75	2.50	2.25
256 x 16		39.00	38.00	
64 x 4			3.25	
64 x1				2.00

SIMM MODULES (Add $5.00 for SIPP)

	60NS	70NS	80NS	100NS
1Meg x 9 (3 Chip)	41.00	38.00	37 00	
1Meg x 9 (9 Chip)	47.00	45.00	44.00	34.00
4Meg x 9	157.00	150.00	141.00	
16Meg x 9		575 00		

72 PIN SIMM MODULES

		60NS	70NS	80NS
256 x 36	1Meg			59.00
512 x 36	2Meg		89.00	84.00
1 x 36	4Meg	175.00	165.00	157 00
2 x 36	8Meg	335.00	320 00	310.00
4 x 36	16Meg	670.00	635.00	625.00
8 x 36	32Meg	1,349.00	1,299.00	
16 x 36	64Meg	CALL	3,516.00	

AST MEMORY MODULES

AST Part #	MODEL	UP AMT	PRICE
500967-001	Bravo LC 4/25S,4/33, etc. 2MB	2MB	120
500967-002	4MB	4MB	170
500967-003	8MB	8MB	395
500967-004	16MB	16MB	819
500967-005	32MB	32MB	1399
	Premium 486/25.25E,33 33E		
	Premium 386/33TE 486/25TE,33TE		
	Prem Serv Prem II 386SX/20,25		
500780-001	Prem. II 386/25,33 486/33,SX20 (8MB)	8MB	398
	Premium 386/33T,Prem 386SX/16		
500780-004	Prem. II 386SX/20, 25	4MB	189
501159-002	Premia 8MB	8MB	379
501159-003	Premia 16MB	16MB	789
501159-004	Premia 32MB	32MB	1489
501159-005	Premia 64MB	64MB	3111

COMPAQ MEMORY MODULES

COMPAQ #	MODEL	UP. AMT	PRICE
115144-001	DeskPro 386/33,386/33L	2 Meg	109.00
116561-001	486/25, 486/33L	8 Meg	429.00
116568-001	486/50L, System Pro	32 Meg	1459.00
113131-001	DeskPro 386/25, 386/20	1 Meg	79.00
113132-001		4 Meg	219 00
113633-001	DeskPro 386S-16Mhz	1 Meg	79 00
112534-001		4 Meg	219 00
113131-001	DeskPro 386/25E	1 Meg	79 00
113132-001		4 Meg	219 00
118688-001	DeskPro 286N 386N	1 Meg	59 00
118689-001	386SX/20,25M,486/33M	2 Meg	89 00
118690-001	486S/25M,486S/16M	4 Meg	180 00
128877-001	Port I Series 486C	8 Meg	389 00
108071-001	DeskPro 386/16	1 Meg	99 00
108072-001		4 Meg	299 00
113012-001	DeskPro 286	512K	49 00
149911-001	DeskPro 5/60 5/66M	8 Meg	389 00
149949-001	Prosignia 5/60	16 Meg	739 00
149912-001	Proliant 100 5/60	32 Meg	1599 00
149913-001	Proliant 2000/4000 etc	64 Meg	2700 00
141738-001	Prolinea 386 3/25S, 3/25ZS	2 Meg	109 00
141742-001		8 Meg	320 00
141683-001	Prolinea 486 4/25S,4/33	2 Meg	95 00
[illegible]	4/50,4/66 CDS	4 Meg	180 00
[illegible]		8 Meg	[illegible]
141685-001	Prosignia PC Server	8 Meg	399.00
149320-001	486/33,486 DSX/66	16 Meg	719.00
149147-001		32 Meg	1525 00

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Zen Part #	MODEL	UP AMT	PRICE
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ZA3800MK	Z386/33,25,20,33E,486/25E	4 Meg	180.00
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30F5360	30-286,25-286,50 MTHR BD	2Meg	104.00
6450375	50-041	1Meg	79.00
6450379	50-111,311-121,321,061,161	[illegible]	84 00
6451060	50-A21,A-61,50-A31,50-111	4Meg	180 00
6450604	70-061 E61,121 50Z,55SX,65SX, P-70,55LS,65LS,X-Sta 120&130	2Meg	89.00
6450608	70-A21,A-61,B-21,B-61,35SX,LS	2Meg	90 00
78X8955	[illegible]	128K	35 00
34F2933	35SX,40SX,55SX,65SX,LS,55LS	4Meg	180 00
87F9977	55SX,55LS,65SX,40SX,35SX,LS	4Meg	180 00
1057035	P/S1-286	512K	49.00
92F9935	P/S1 & P/S1/386SX-2121	2Meg	89.00
92F9694	P/S1 & P/S1/386SX-Model 2121	4Meg	189.00
6450902	56,57 57SX,90,95,P-75 57SLC Value Pt 77 486DX2,SX,SVR 85	2Meg	90 00
6450128	57SX,90,95,P-75,57SLC,56,SLC P/S1,386SX-2123,2133,2155,Val Pt 77,486DX2,SX,SVR 85 Pt 77, 486DX2,SX,SVR 85	4Meg	175.00
6450129	35SX,40SX	8Meg	379.00
6450130	56,57,57SX,90,95,P-75,57SLC	8Meg	379.00
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4033	RISC System/6000	32Meg	1699.00
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310-2625	Power Desktop 486D,466P	16Meg	789.00
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310-3336		16Meg	799.00
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	[illegible]	16Meg	699 00
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129769-002	LTE LITE/20,25,25C	4Meg	229
129769-003		8Meg	375
129769-004		16Meg	809
142337-002	LTE LITE 4/25C,4/23E 433C	4Meg	199
142337-003		8Meg	384
142337-004		16Meg	789
110235-001	SLT/286	1Meg	75
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118303-001	SLT/386	1Meg	79
118304-001	SLT/386	2Meg	109
118305-001	SLT/386	4Meg	209
144790-001	Concerto	4Meg	200
144790-002		8Meg	395
113132-001	Deskpro 386/25/20/25e/20e	4Meg	198
139497-001	Contura 320, 325	2Meg	104
139498-001		4Meg	189
139499-001		8Meg	349
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146521-001		8Meg	345
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79F1000	LX40,N33SX,PS Note,Thinkpad	4Meg	199 00
79F1001	LX40,N33SX,PS Note	8Meg	349 00
07G1826	N51 (all)	2Meg	103 00
07G1827		4Meg	199 00
07G1828		8Meg	419 00
53G6958	*Thinkpad 710T	2Meg	110 00
53G6959		4Meg	220 00
53G6960		8Meg	420 00
07G1414	Thinkpad 750,750c	2Meg	119 00
07G1415		4Meg	209 00
07G1416		8Meg	395 00
66G0094		16Meg	959 00
07G1420	CL57LSX LpTp,Thinkpad 700,	4Meg	209 00
07G1421	700C,720,720C	8Meg	395 00
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92F6804	N45SL	2Meg	109 00

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MFG Part#	MODEL	UP AMT	PRICE
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PC16-PA8317U	T2000/T2000SX	2Meg	94 00
PC-PA8314U	T2000SX/T1000LE	4Meg	209 00
PC14-PA8315U		8Meg	399 00
PC-PA2000U	T2000SXE/2200SX/T1800,	2Meg	94 00
PC-PA2001U	1850, C	4Meg	195 00
PC-PA2002U		8Meg	399 00
PC-PA2004U	T4400SX, SXC T6400	4Meg	209 00
PC-PA2005U		8Meg	399 00
PC-PA2010U		16Meg	704 00
PC-PA2012U	T4500,T4500C,T4600,	4Meg	209 00
PC-PA2013U	T1900,T1900C(3 3v)	8Meg	385 00
PC-PA2014U		16Meg	959 00
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PC-PA2009U	T3300SL	16Meg	699 00
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PC9-PA8340U	T3100e	2Meg	109 00
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PC15-PA8310U	T3100SX	4Meg	209 00
PC8-PA7137U	T3200	3Meg	165 00
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PC12-PA8309	T3200SX	4Meg	209 00
PC19-PA8318U	T3200SXC	2Meg	119 00
PC19-PA8319U	T3200SXC	4Meg	219 00
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PC43 22	NEC Prospeed 386SX 20	4Meg	199 00
PC47 21	NEC Ultralite III/20 20P 25C	2Meg	109 00
PC47 22	NEC Ultralite III/SL/25C	4Meg	199 00
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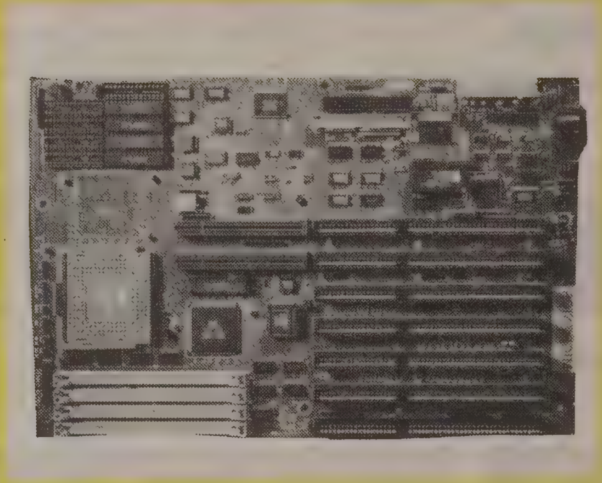

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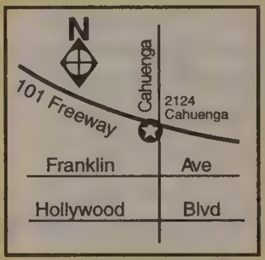

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The Legacy Of Gary Kildall *continued...*

wouldn't have to drive from Monterey to Silicon Valley to use a client's mainframe.

The same obituary also repeated the myth about how Gary supposedly blew his chance at a slice of the PC pie by skipping out of a meeting with IBM to go joy-flying instead. I'm sure Gary grew weary of constantly having to answer questions about that day. For the record, the myth just isn't true. Gary *did* meet with IBM that day, as scheduled, and they *did* agree to do business. And yet despite Gary's efforts to set the record straight, the story seemed to reappear every time an interviewer asked Gates about the origins of MS-DOS.

In fact, IBM licensed both MS-DOS *and* CP/M-86 for the PC. DOS carried a list price of $40 and was generally bundled free with every PC sold. CP/M-86, on the other hand, was offered only as a $240 added-cost option, and had to be specially ordered from the factory. Most buyers figured a brand new PC wasn't much good if you had to wait an indeterminate number of weeks for the operating system to arrive.

CP/M-86 for the PC didn't just languish and die; I think it was deliberately killed. IBM chose not to promote CP/M, I think, precisely because it was machine independent. IBM clearly saw a strategic advantage to establishing a custom OS that locked user software into its then-proprietary hardware platform.

Deep down, though, I don't think Gary ever really begrudged Bill Gates his business success or his personal fortune. Before the IBM deal, the two had worked together closely. If Gary was disappointed at the way things turned out, I suspect his frustration was directed towards IBM for deliberately misrepresenting their OS intentions, and toward the apparent willingness of the public and press to grant Bill Gates credit for "inventing" a major piece of software he neither designed nor understood.

No, Gary didn't much care about self-aggrandizement. He much preferred playing with his computers, racing cars, and other high-tech toys. He found it a much greater thrill to design a new program and watch it spring to life than to look for new ways to undercut and outmaneuver a competitor.

Gary was much more comfortable working in an environment where he could interview new job applicants while wearing a toga and roller skates than he was in negotiating licensing deals with a multinational corporation. Gary was more interested in giving away free software and documentation to a junior applications engineer he'd just met than in building his own satellite-based global communications network.

The Legacy

In the end, what I think Gary wanted most was to share his excitement and enthusiasm for computers and technology with others, and to get his ideas into the hands of as many people as possible.

There are 120 million PCs in the world today. All run disk-based operating systems and high-level compiled applications, and most depend on floppy disks for software distribution and data storage. Many have menu-driven windowing systems and support CD-ROM-based multimedia. A growing number are connected to local-area networks and allow preemptive multitasking.

Each of these systems owes a debt to Gary Kildall. Each of these capabilities originated in Gary's head. When I consider the hundreds of millions of ordinary people who benefit from Gary's ideas and inventions every day, I have to think most of his wishes have been met. ■

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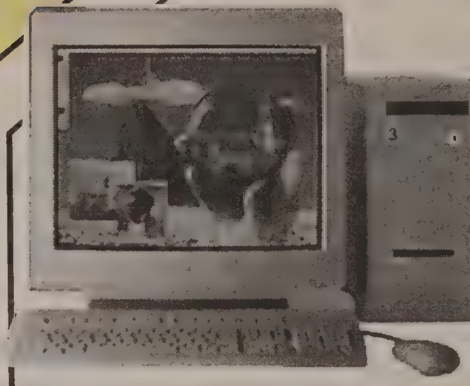

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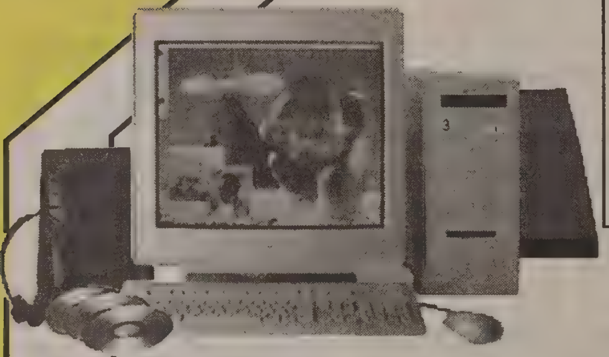

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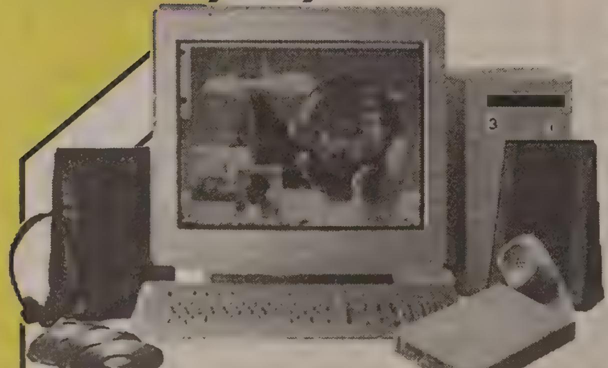
- 486SX/33MHz
- Mini Tower Case (200W)
- 4Mb RAM
- 1.44 Floppy Drive
- 170Mb Hard Drive
- Super IDE I/O Controller
- SVGA Video Card
- 2x CD-ROM
- 16bit Sound Card
- 14" SVGA Monitor
- 101 AT Keyboard
- 3-Button Mouse & Pad
- 12 CD Titles
- 40W Power Speakers

$989

"4842 - BUSINESS PRO MULTIMEDIA"

- 486DX2/66MHz
- Medium Tower Case (256KB Cache)
- VESA Local Bus Motherboard
- 8MB RAM
- 1.44, 1.2 Floppy Drives
- 420Mb Hard Drive
- VLB IDE I/O Controller
- VLB Video Accelerator w/1M
- 14.4/14.4 Data/Fax Modem
- 2x CD-ROM
- 16bit Sound Card
- 250Mb Conner Tape Back-up
- 14" .28 Non-Interlaced SVGA Monitor
- 101 AT Enhanced Keyboard
- 3-Button Mouse & Pad
- 12 CD Titles
- 40W Power Speakers

$1870



"5854 - PENTIUM PRO"

- 586 Pentium/66MHz
- Full Tower Case (250W)
- PCI VLB Motherboard (512KB Cache)
- 8Mb RAM
- 1.44, 1.2 Floppy Drive
- 540Mb Hard Drive
- PCI Controller Card
- ATI/PCI Video Graphics Card
- 15" .28 Non-Interlaced SVGA Monitor
- 101 AT Enhanced Keyboard
- 3-Button Mouse & Pad

$2310

"5810S - PENTIUM STEALTH"

- 586 Pentium/90MHz
- Full Tower Case (250W)
- PCI Motherboard (512KB Cache)
- 16Mb RAM
- 1.44, 1.2 Floppy Drive
- 1 Gigabyte Hard Drive
- SCSI Controller
- ATI/PCI Video Graphics Accelerator Card
- 14.4/14.4 Data/Fax Modem
- 250Mb Tape Back-up
- 15" .28 Non-Interlaced SVGA Monitor (Viewsonic)
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- SCSI Controller
- 14" Monochrome Monitor w/Card
- 101 AT Enhanced Keyboard

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NETWORKS

WORKSTATION

486SX/33MHz

- Mini Tower Case (200W)
- ISA Motherboard
- 4Mb RAM
- 1.44 Floppy Drive
- Super IDE I/O Controller Card
- SVGA Video Card
- 14" SVGA Monitor
- 101 AT Keyboard
- 3-Button Mouse & Pad

$3100

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Includes: Cabling, Software (Novell 3.12 5-user), Installation and set-up! **$1000**

Miscellaneous

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	39, 14" SVGA Color	$180
	.28 Interlaced, 14"	$209
	.28 Non-Interlaced, 14"	$215
Viewsonic		
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	6E	$278
	15	$425
	15E	$339
	15EX	$364
	7E	$719
	7G	$782
	17	$929
	21	$1754
Optiquest		
	2000DS	$339

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170MB	$149
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1.2GB (SCSI-2)	CALL
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14.4 Fax/Modem (Ext.)	$159
14.4 Fax/Modem (Mini)	$189

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8 Bit Sound Card	$59
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Multimedia Package:

- 16 Bit Sound Card
- Double Speed CD-ROM
- Speaker

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Win Work Group	CALL

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Microsoft 2 Mouse	$27
Trackball	$19

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	2250	$112
	LQ 570	$230
	Inkjet 300	$224
	Inkjet 800	$272
HEWLETT PACKARD		
	HP 520	$275
	HP 560C	$545
	HP 4L	$630

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SX-25MHz Intel	$125
SX-33MHz Intel	$155
VESA	
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486SX-33MHz w/256K	$199
486DX-33MHz w/256K, Math Co Intel	$310
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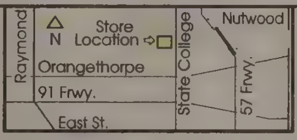

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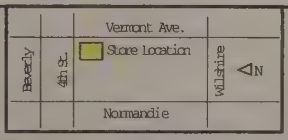

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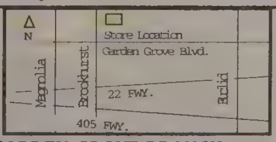

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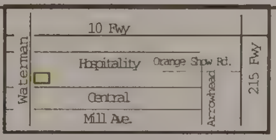

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- Ports for AT expansion box
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- Carrying Case & AC/Adapter
- Weight 6 lbs. with Battery
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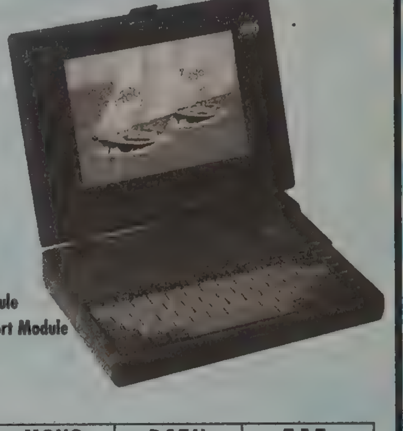

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- Fax/Modem (9600/2400bps) Module
- Lan Adapter Module / 2nd Serial Port Module
- PCMCIA* Type II Interface Module
- Scanner Module / SCSI Module
- AT Expansion Box

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486DX-33, 4MB/250MB	$1475	$1975	$2955
486DX2-66, 4MB/250MB	$1565	$2065	$3045

FR-800

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- 32Bit VL-Bus
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- PCMCIA Slot Type III
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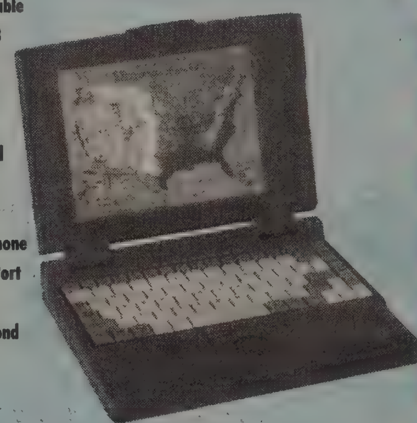

SL ENHANCED	MONO	DSTN	TFT
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486DX-33 4MB/260MB	$1665	$2125	$3095
486DX2-66 4MB/260MB	$1725	$2165	$3145

TS-380

Intel 486DX-25 upgradable DX4
4MB RAM up to 20MB
3.5" Floppy Drive
250MB up to 520MB Hard Drive
Build-in Trackball Mouse in center
PCMCIA III Slot
1 Serial, 1 Parallel, VGA,
Keyboard, Docking port
9.5" Mono/Du-Scan/Active
Weight: 5.8lb w/battery
Dimension: 11"x8.5x1.73

MiTA

- Intel 486 SX-25 SL Enhanced
- 4Mb RAM, 8K Int cache
- Ext. 1.44Mb Floppy Drive
- 120Mb Hard Disk Removable
- 2 PCMCIA Slot
- 9.5" Mono LCD Passive
- Build-in Trackball mouse
- 1 Serial , Parallel, Mouse
- 8 Bit Sound Card Build-in
- Less than 4 lb
- Dimension: 10.5" x 7.8" x 1.5"
- MS-DOS6.0, Windows 3.1 Preload

Canon BJC-600 PERSONAL COLOR PRINTER

- Prints 360 dpi on Plain Paper for Brilliant Color Quality
- Doubles as a Laser Quality, Black & White Printer
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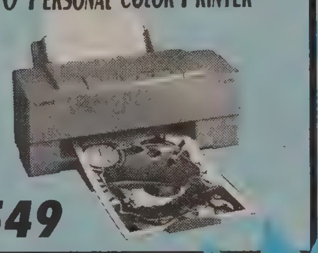
- 100 Sheet Feeder for Letter, Legal, Envelopes
- 20 Scalable True Type Font
- 2 Year Warranty



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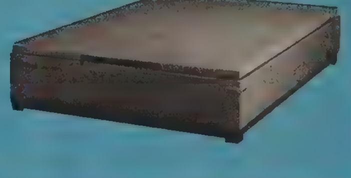
Canon IX-4015 Color Scanner

- 24 bit Color
- 400 DPI x 1200 DPI Hi-Resolution
- 20 Second Color Scanning Speed (10 Second Mono)
- One Year Warranty



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- 4Mb RAM
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- Trackball mouse
- Keyboard
- 83 Keys Keyboard
- Weight: 5.7 lbs
- Dimension: 11" x 8.5" x 1.75"
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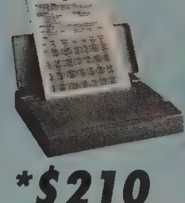

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PENTIUM PCI

- Intel Pentium CPU 60/66/90 Mhz
- 256K Cache up to 512K
- 8MB RAM up to 128MB
- 1.2 & 1.44MB Floppy Drives
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- PCI SVGA Card w/2MB
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- Sound Blaster 16-bit MCD Sound C
- 7 CD Titles
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- 80w Power Speaker
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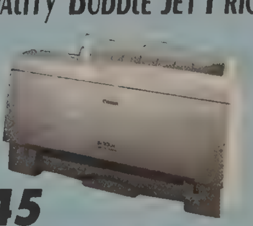

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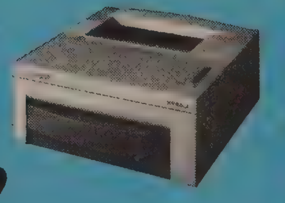
Canon LASER PRINTER

LBP-430

Same as HP 4L

- Energy Saving
- 22 Fonts (8 Scalable)
- 1Mb up to 5Mb
- 2 Year Warranty



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Canon Notejet 486

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- 4MB Up to 12MB
- 1.44MB Floppy Drive
- 130MB Hard Disk (190MB Option)
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- Automatic Sheet Feeder Built-In
- PCMCIA - 2 Type II
- 10" LCD VGA Screen
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- 4 Hour Battery
- 7.7 Lbs. w/Bubble Jet Printer Inside

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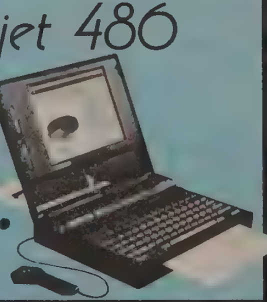

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- 600 DPI
- 45 Scalable Fonts
- 2Mb RAM up to 34Mb
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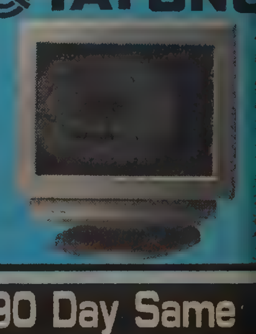

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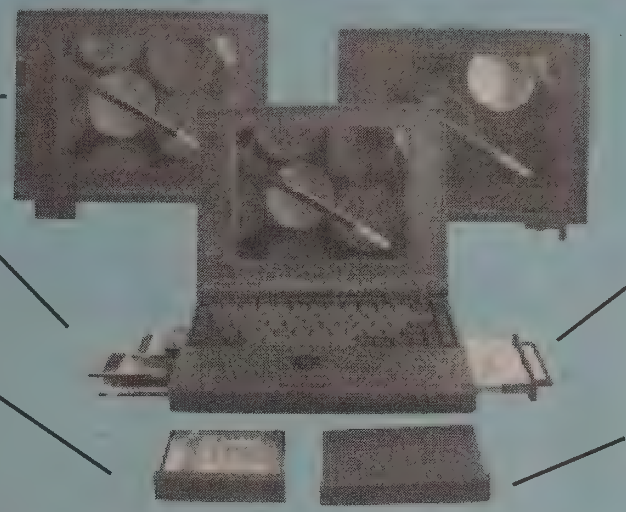

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DX4-75 4/250	N/A	$2629	$3550

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200 Mb...
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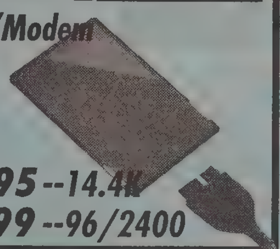

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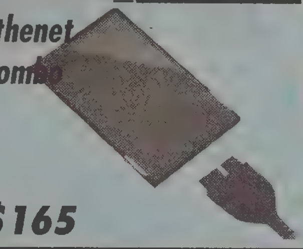

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- 425MB Hard Drive
- VESA Local Bus IDE/FDD Controller w/2S, 1P
- VESA Local Bus SVGA Card w/1MB
- 14" SVGA NI Monitor .28 Dot
- Panasonic Double Speed CD-ROM
- 16-bit Stereo Sound Card w/2 Speakers
- 101 Enhanced Keyboard
- Serial Mouse w/Pad
- Mid Tower Case w/230w PS

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486DX2 VLB 66

- 486 DX2-66 Mhz CPU
- 256K Cache, 2 Local Bus/7 ISA Slots
- 4MB RAM up to 32MB
- 1.2 & 1.44MB Floppy Drives
- 425MB Hard Drive
- VESA Local Bus IDE/FDD Controller w/2S, 1P
- VESA Local Bus SVGA Card w/1MB
- 14" SVGA NI Monitor .28 Dot
- 101 Enhanced Keyboard
- Serial Mouse w/Pad
- Mid Tower Case w/230w PS

$1225

386DX 40

- 386 DX-40 Mhz CPU
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- Multi-sync
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- Medium Tower Case
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- Sound Blaster SCSI-2 16 Bit Sound Card
- 9 CD Titles, 2 Mini Speakers

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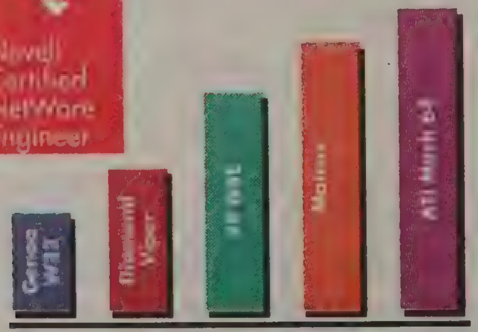

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Intel 486DX2-66MHz	**$1179**
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DOS & Windows Package	**$90**
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- Pentium P24T Ready Socket
- Double Speed CD ROM Player
- 16 Bit Sound Card, 2 Mini Speakers, 9 CD Titles
- 1.44MB Floppy Drive
- 420MB, 13ms IDE Hard Drive
- Fast VESA LB IDE Controller (50x Faster than Standard Controller)
- 14" SVGA Color Monitor NI Flicker-Free
- Super VESA LB Accelerator Video (16.8M Colors & Up to 1280 x 1024)
- 2 Serial, 1 Parallel, 1 Game Port
- 101 Enhanced Keyboard
- Desktop or Mid Tower
- Free Hi Res 1450 DPI Mouse

Intel 486DX-33MHz	**$1399**
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Intel 486DX4-100MHz	**$1749**
DOS & Windows Package	**$90**
1.2MB Floppy	**$48**

Pentium Power House

- Intel CPU
- 256K Cache, 8MB RAM
- 1.44MB Floppy Drive
- 420MB, 13ms IDE Hard Drive
- VESA Bit IDE Enhanced Interface
- VESA SVGA Card 1MB Win Accelerator
- 2 Serial, 1 Parallel, 1 Game Port
- 15" SVGA NI Color Monitor
- 101 Enhanced Keyboard
- Desktop or Medium Tower
- Free Hi-Res Serial Mouse
- Free CPU Cooling Fan

P5-60MHz	**$1769**
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MS DOS 6.2 & Windows 3.11	**$90**

PCI Super Fast MultiMedia

- Intel CPU
- 256K Cache, 8MB RAM
- Double Speed CD ROM
- 16 Bit Sound Card, 2 Mini Speakers
- 9 CD Titles
- 1.44MB Floppy Drive
- 420MB, 13ms IDE Hard Drive
- PCI 64 Bit IDE Enhanced Interface
- PCI 64 Bit Diamond Speedstar 64 1MB
- 2 Serial, 1 Parallel, 1 Game Port
- 15" SVGA NI Color Monitor
- 101 Enhanced Keyboard
- Desktop or Medium Tower
- Free Hi-Res Serial Mouse
- Free CPU Cooling Fan

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P5-60MHz	**$2249**
P5-66MHz	**$2369**
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Package #2.........$289
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Package #3.........$399
Toshiba 3401B SCSI CD ROM 300KB/200ms w/16 Bit Pro Audio Spectrum, 6 CD Titles, 2 Mini Speakers

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NEC CDR 510 3x Spin Int. OEM	369
NEC 3xi Spin Int. CDR 500	519
NEC 3xe Spin Ext. CDR 600	615
Panasonic CR-562B Int. D-Spin 320ms	149
Toshiba 3401B Int. SCSI 200ms	279
Sony 31A 2X	149

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PCI 486DX2-66 256K Cache	459
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VLB 486DX-33 256K Cache	335
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Game Port	12
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Adaptec 1542BK w/Kit	259
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Adaptec 2742 (Bare), EISA SCSI	280
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Viewsonic 15	445
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Viewsonic 20	1469
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NEC 4FGE 15"	639
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NEC 6FGP 21"	2069

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Chicony 5311/Generic	$18
Chicony 5181	33
Chicony 5591 w/Trackball	59
Focus 2001	38
Focus 9001	55
Keytronic 101 Keys	35
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96/24 Int. Fax/Modem	45
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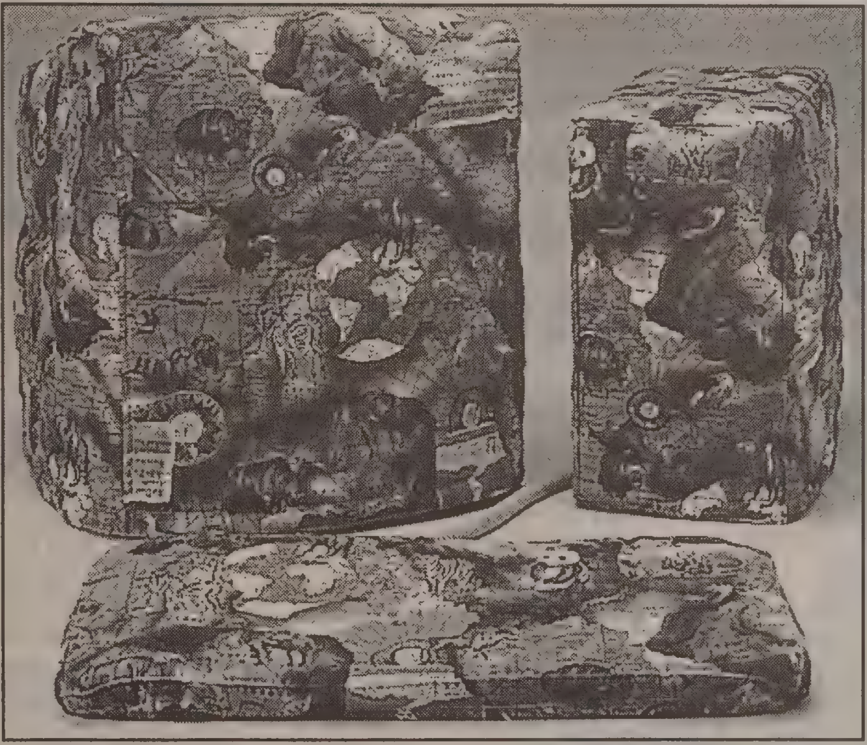

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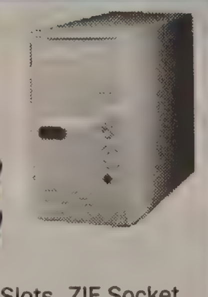
486DX/DX2 VLB Bus



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486DX-33....... $919

- 486VLB MB w/256K Cache w/ 3VLB Slots, ZIF Socket
- **486DX CPU's "Not SX"**
- **4Mb System RAM**
- **420Mb IDE 3.5" Hard Disk Drive w/Onboard Cache**
- 1.2Mb 5.25" & 1.44Mb 3.5" Floppy Drives
- 32-Bit VLB IDE Hard Drive/Floppy Drive Controller
- 32-Bit VLB 1Mb SVGA Accelerator Video Card
- 2 Serial, 1 Parallel, 1 Game Ports
- 101 Key Enhanced Keyboard
- Mini-Vertical Case w/ 230Watt Power Supply
- **MONITOR SOLD SEPARATELY...SEE NEXT PAGE...**

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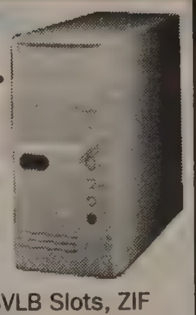

486DX2-66.. $1499

486DX-33..... $1419

- AVAX 486VLB MB w/256K Cache w/ 3VLB Slots, ZIF
- **486DX CPU's "Not SX"**
- **16Mb System RAM**
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- 1.2Mb 5.25" & 1.44Mb 3.5" Floppy Drives
- 32-Bit VLB IDE Hard Drive/Floppy Drive Controller
- 32-Bit VLB 1Mb SVGA Accelerator Video Card
- 2 Serial, 1 Parallel, 1 Game Ports
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Intel Pentium 60/66/90 PCI

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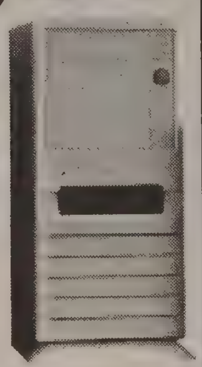


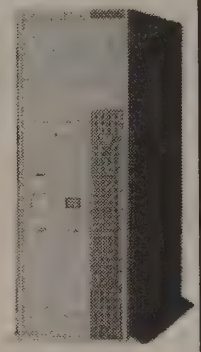
Pentium-90 . $2199

Pentium-66 . $1999

Pentium-60 . $1899

- Intel Pentium PCI Mbd & Intel Pentium 60/66/90Mhz CPU w/256K Cache
- **8Mb System RAM**
- **540Mb IDE 3.5" HDD w/ Cache**
- 1.2Mb 5.25" & 1.44Mb 3.5" FDD's
- 2 Serial, 1 Parallel, 1 Game Ports
- **Orchid Kelvin64 64-Bit DRAM PCI Accelerator**
- Mid-Vertical Case w/230Watt Power Supply & Two Super Cooling Fans
- 101 Key Enhanced Keyboard
- **MONITOR SOLD SEPARATELY...SEE NEXT PAGE...**

Pentium 60/66 VLB



Pentium-66 . $1929

Pentium-60 . $1829

- Pentium VLB Mbd & Intel Pentium 60 or 66Mhz CPU w/256K Cache
- **8Mb System RAM**
- **540Mb IDE 3.5" HDD w/ Cache**
- 1.2Mb 5.25" & 1.44Mb 3.5" FDD's
- 2 Serial, 1 Parallel, 1 Game Ports
- 32-Bit VLB 1Mb SVGA Accelerator Video Card
- Mid-Vertical Case w/230Watt Power Supply & Two Super Cooling Fans
- 101 Key Enhanced Keyboard
- **MONITOR SOLD SEPARATELY...SEE NEXT PAGE...**

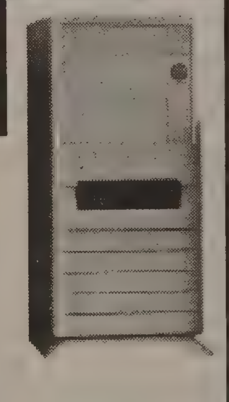
COMPLETE SYSTEM

486DX/DX2-66 VLB

486DX2-66... $1499

- 486VLB MB w/256K Cache w/ 3VLB Slots, ZIF Socket
- **486DX2-66MHZ AMD CPU "Not SX"**
- **8Mb System RAM**
- **420Mb IDE 3.5" Hard Disk Drive w/Onboard Cache**
- 1.2Mb 5.25" & 1.44Mb 3.5" Floppy Drives
- 32-Bit VLB IDE Hard Drive/Floppy Drive Controller
- 32-Bit VLB 1Mb SVGA Accelerator Video Card
- 2 Serial, 1 Parallel, 1 Game Ports
- 101 Key Enhanced Keyboard
- Mini-Vertical Case w/ 230Watt Power Supply
- **15" SVGA-NI 1280X1024 72HZ MONITOR**

PENTIUM-90MHZ SUPER-SYSTEM



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- Pentium PCI Mbd & Intel Pentium 90Mhz CPU w/256K Cache
- **16Mb System RAM**
- **540Mb IDE 3.5" HDD w/ Cache**
- 1.2Mb 5.25" & 1.44Mb 3.5" FDD's
- 2 Serial, 1 Parallel, 1 Game Ports
- **Ultra Fast ATI Mach64 2Mb VRAM Accelerator**
- Mid-Vertical Case w/230Watt Power Supply & Two Super Cooling Fans
- 101 Key Enhanced Keyboard
- **MONITOR SOLD SEPARATELY...SEE NEXT PAGE...**

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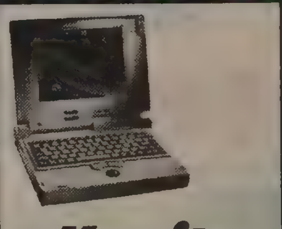

Kenitec

$1199 NP-602 Notebook

Features:
486-33Mhz CPU, 4mb RAM, 130mb HDD,Built-in "Palm Rest" Trackball, 10" 64 Gray Scale VGA Compatible LCD Display, Internal 1.44Mb Floppy Disk Drive, Complete w/ Carrying Case & Charger.

486 256 Color

Kenitec

DarkKrystle GX

$1899

Features:
486SX-33Mhz (Upgradable to 486DX2-66Mhz), 4mb RAM, 130mb HDD,Built-in Trackball, 9.5" 256 Color Dual Scan STN Color LCD Display, 32-Bit VLB SVGA Accelerator Card, Internal 1.44 FDD, Complete w/ Carrying Case & Charger.

MiTAC

486/25 Subnotebook

$1399

Features:
Intel SL Enhanced 486SX-25Mhz CPU, 4mb RAM, 130mb HDD,Built-in "Palm Rest" Trackball, 9.5" 64 Gray Scale Dual Scan LCD Display, Removable Drive System, **2 PCMCIA Slots.**

MiTAC

486/33 Color $1788

Features:
Intel 486SX 33Mhz CPU, 4mb RAM, 120mb HDD, 5.9lbs, Digital Controls, Passive Matrix Color, Windows Accelerator, Built-In Trackball, Optional Mini-Docking Station

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15E 15" NI SVGA, 76Hz refresh (1280x1024,.28dp)	$375.00
15EX 15" NI SVGA, Digital (1280x1024,.28dp)	$399.00
15PS 15" NI SVGA, Digital (1280x1024,.28dp)	$449.00
17E 17" NI SVGA, Digital (1280x1024,.28dp)	$699.00
17G 17" Digital, On-Screen Control (1280x1024,.28dp)	$789.00
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Cirrus Logic 5428 VLB Graphics Accelerator w/1MB	$85.00
TVGA-9000 SVGA Card w/256K (upto 512K)	$33.00
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TVGA-9400 VLB Graphics Accelerator w/1MB	$75.00
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Orchid

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Z-Nix / Dana point Serial Mouse	$13.00

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Logitech MouseMan Bus	$69.00
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Logitech TrackMan Combo (Serial/PS-2)	$79.00
Logitech CyberMan 3D Game Controller	$85.00
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Microsoft

Microsoft Serial Mouse (OEM, w/system)	$36.00
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Microsoft Bus Mouse	$85.00

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Aceex

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PCMCIA 96/24 Fax Modem	$135.00
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External 144/144 Fax Modem	$125.00
Pocket 144/144 Fax Modem	$155.00
Internal 288/144 Fax Modem	$155.00
External 288/144 Fax Modem	$195.00

US Robotics

Internal 144/144 Fax Modem	$125.00
External 144/144 Fax Modem	$145.00
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Chicony KB-5311 101keys Keyboard	$23.00
Chicony KB-5181 101keys Keyboard (Click)	$38.00
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Focus 2001 101keys Keyboard w/Dustcover	$38.00
Focus 2001B 102keys Keyboard w/Dustcover (Black)	$42.00
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Fcous 9000 128keys Programmable Keyboard	$55.00
Fujitsu 4700 101keys Keyboard	$47.00
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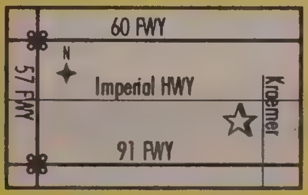

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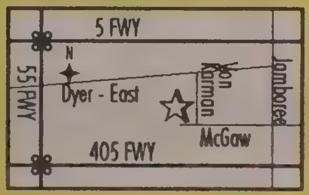

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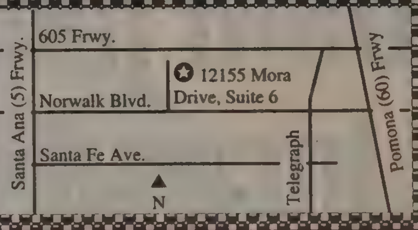

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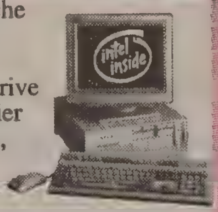

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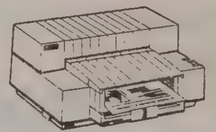

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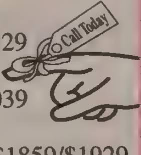

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Killing Moon

continued from page 66

Madden Football or Michael Jordan Basketball.

The main difference is that a lot of big players are now involved—you've got Warner Bros., you've got Amblen. All these people who have traditionally been involved with movies now see the potential of multimedia. From that standpoint, I think, especially over the next twelve to eighteen months, the rules really are going to change as to how we negotiate with everyone and who is going to be available for this work. A lot of the major studios are going to tie up the people that they have traditionally dealt with. It is going to make things a little more difficult for independents. But I think there will always be high-quality actors available that we can use to make our products very successful.

Also, as the power of the machine grows the product itself will start to take on more and more of the way that a movie feels. Once there is a base of Pentiums out there, it is almost like the sky's the limit on what we can do.

For now, we have to reach back, we can't leave the 386es and the 486es. We still have to grab back in order to have enough of a base to make this project financially feasible. Eventually that older hardware starts to fade away and the more powerful machines start to become the norm. This is really just the beginning of what we are able to do. In two years, the difference that you will see is going to be tremendous.

I guess the market you are aiming for is labeled Home Entertainment, but there are still not that many CD-ROM drives in that market.

A year and a half to two years ago, when we started there wasn't a base that would work for us. But now there is a big enough base. It has been turning the corner over the last six months, since Christmas. If our piece is successful within the "CD multimedia market" then we are OK.

The computer is now coming online to do what everybody thought it could do ten years ago. In the next three or four years, computers are going to be an absolute necessity to have at home. And when people get it for what they consider to be the necessity, they are going to be picking up the entertainment along the way. Thus, the market is just going to expand for us. It is going to be even more viable for the actors who are involved with these projects. It is not going to replace those other two forms of entertainment, but it is going to take its place as the third medium in the home for this experience.

As this market expands, where do you see your competition coming from? The movie industry?

Yes, and they will eat up the smaller players. It used to be that a core group of six or seven could turn out a product in eight or nine months. That's gone. For us, it was twenty-five to thirty people involved with this for a year and a half. You can't do that if you are a small group.

As something new, how is this being marketed? As software? As video?

I think we are going to go straight after what we would term as entertainment. It is entertainment on CD, a software entertainment package.

I will be able to go into a computer store? I'll be able to go into a Blockbuster-type of place?

Right, and hopefully more video stores such as Blockbuster will get involved. Because of the size of the market that we have right now, it is probably viable only at some of the bigger chains. But eventually that is going to change as we increase the market for good-quality CD products.

Under a Killing Moon will first be available for the PC, later for the Mac; what do you use in-house to make this project?

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HP	DESKJET500/PLOTER/II/IID/IIP/IIP+/III/IIID/IIIP/IIISI/4/SI/M/MX/P/M
IBM	LEXMARK 10/R/A/L/P/12R/L/16L/5E/6/A/P/4019/E
KONICA	LP 3110/3115/KYOCERA F800/F800A/F800T
OKIDATA	OL 800/820/830,PLUS/840/850/810/400/400E/410E
PANASONIC	KX P 4450/4420/4455/4451/4410/4430/4400/5400
SHARP	JX-9400/9460/9600/PS/9660/9700/E/9500/PS/E/H

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PLUS,SE,IICi,IISi,LCIII,IICX,IIVX,IIVi,PERFORMA		95	152	335	595
MACIIX,IIX	69	-	185		635
MACIFX	-		245		725
PERFORMA 450/460/466/467/475/476/550			159	350	650
CENTRIS 610/650/660AV/LCIII/QUADRA 600's	49	95	155	338	625
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POWERBOOK 165C/180C	-		195	379	

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BRAVO 3/25s/33s	–	110	165	345	645
BRAVO LC 486 BASED,4/25s/33/33s/50d/66d		110	170	350	
ADVANTAGE 386/20/25, PRO 386SX25		108		350	
ADVANTAGE PLUS/486 SERIES	-	110	175	355	
ADVANTAGE PRO 486DX/33,SX25		118	185	385	670
PREMIUM 386/386c	75		175		
PREMIUM 386/33T,SX 16,PREMIUM II 386SX	68		168		
POWEREXEC 286/12,386SX/20/25/25c	75		198		
POWEREXEC 3/25SL/SLC/EL	-	135	245	495	995
POWEREXEC 4/33 SL,COLOR,COLOR PLUS	–		195	--	850

NEC

MODEL	1MB	2MB	4MB	8MB	16MB
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POWERMATE 386/25s	—		195	350	
POWERMATE 386/33i,486 SERIES,EXPRES READY 425/433/EXPRESS/II 433ST/466ST	75	.	195	-	648
IMAGE 486/P60 SERIES	.		195	364	665
PROSPEED 486SX/SXC/16/286	79	115	195	365	

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MODEL	1MB	2MB	4MB	8MB	16MB
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VECTRA 486MI,M,MX,486/25/33/50/66/N,NI,486U PC 486 VI	69	120	188	350	665

COMPAQ

MODEL	1MB	2MB	4MB	8MB	16MB
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DESKPRO 286/386N/s/20,SERIESi SYSTEM PRO LT/486/33,PROSIGNIA PC SERVER 486/33/DX2-66/386/25M /33M,486s/16/25/33/2 50/2 66 M SERIES,SYSTEM PRO/386,486 LT SERIES,XE 433s/450/466	69	115	179	365	650
DESKPRO 386/33,SYSTEMPRO 386/33,486/33L /25/50L/33,1020e,2040e,486/331e/680e		120	185	375	
PROLINEA 4/25s/33/50/66/MT SERIES,CDSNET1/25s,PRESARIO 400/600/800 SERIES	66	125	185	198	665
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MODEL	1MB	2MB	4MB	8MB	16MB
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P/2 MODEL SX25/35/40/40/507/60/65/70/73/80/80-041 486 90XP/VALUEPOINT 325T/425SX/Si/433DK/466DX 2/Si/425SX/433SX/433DX/450DX2/P60/D,RS6000, POWER STATION/POWER SERVER 220	68	120	179	360	665
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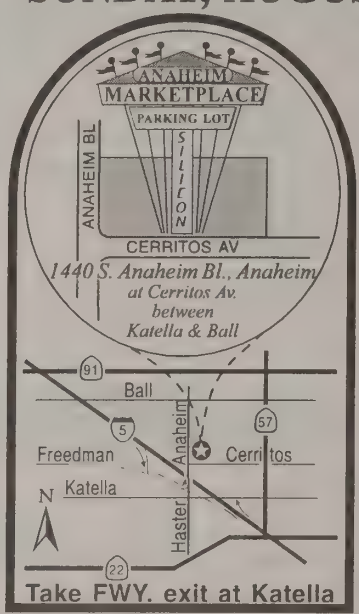

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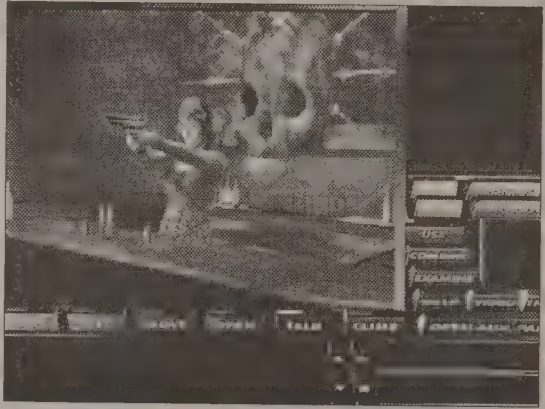
Talking With Margot Kidder



Margot Kidder, best known as Lois Lane in the Superman movies, appears in Under a Killing Moon as Sass the bartender. Acting on her information, and with assistance from the mysterious Big P.I. In The Sky (James Earl Jones), Tex races to solve the mystery and save the world as we know it.

What attracted you to this project?

What attracted me was that I got paid a lot of money for a day's work on something called virtual reality that I had read about in *Scientific American*. I really knew nothing beyond that. I am computer illiterate and laughed my way sick through a day's work trying to figure out what on earth I was doing.

I've just seen for the first time a year later what I was doing, which is variables on any number of things interacting with a main player. I thought I was interacting with actors I had not met yet. In fact, I was interacting with you, the player. It's great fun, it is quite extraordinary.

What was the experience doing this, filming in isolation?

I just laughed. I tend to have a "when in trouble, laugh" outlook on things. I had no idea what I was doing, absolutely none. I just put my faith in Access Software and what they told me.

Do you see this as a medium to be growing?

I am sort of too old to answer that question, I am not being vain or modest. In a real sense I think that I really am. To me, it was a big move from my typewriter to a computer. For a new population of kids to whom this is merely another appendage it is no big deal.

I think it is another B movie business in the sense of the Arnold Schwarzenegger "let me kill you again, baby" or whatever those movies are. We have it again, but now we have it in your living room. You have four hours as opposed to one and a half and you get to play it.

I think it's on the same artistic level as the Arnold Schwarzenegger or Sylvester Stallone levels. And it will never really supersede that because you cannot create drama when you don't know the ending, you can't use the rules of drama, you can't do the characterizations when you have a player who can pick out any ending. What you've got is pure entertainment, in your living room. And it is kind of neat. ■

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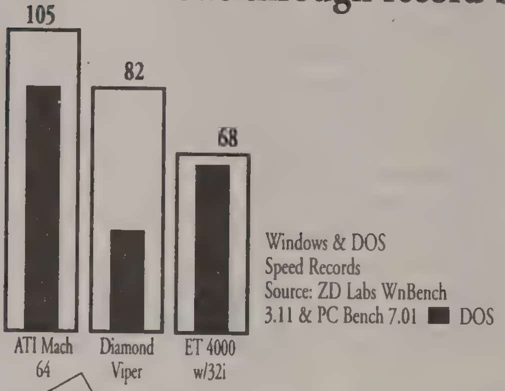
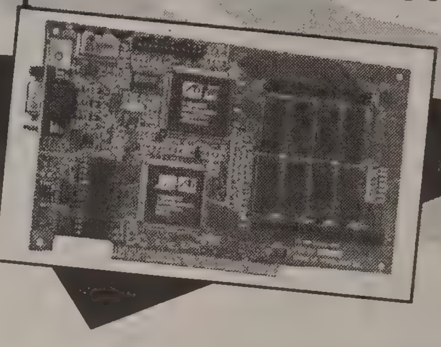


Windows & DOS Speed Records Source: ZD Labs WnBench 3.11 & PC Bench 7.01



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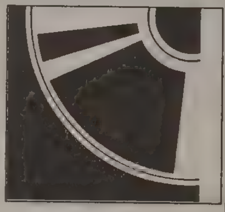

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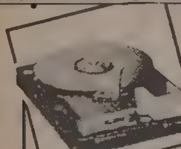

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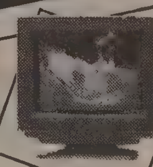

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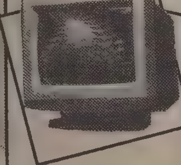

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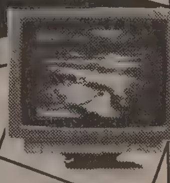

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Continued from page 116

available for what I do on the Mac and the IBM. I can put together a number of programs on the Mac and IBM that would be far more expensive than I am used to paying for on the Amiga.

The biggest limitation is I have yet to find a comparable program to DeluxePaint. I wish someone would tell me about a program that animates as easily, while still allowing me to work in 8-bit and in video resolution, 724 x 482. I haven't found it yet. Right now, I can do essentially everything I want to do 2-D-wise with ADPro and DeluxePaint.

What machine out there, what IBM or Mac is going to have the Toaster, plus ADPro, plus DeluxePaint, plus multitasking, plus...? I can't imagine another machine giving me the productivity that this machine has given me with multitasking. I'm always running two programs, sometimes three.

The other big advantage I've found is the Amiga community itself. The programs that I use have great tech support. I find I can get a hold of somebody on the phone and they listen to my problem. It's obvious they listen to users, because the programs that I use are upgraded constantly and have just gotten better. I mean, look at ADPro, DeluxePaint—it's just a constant improvement.

And often you get to talk to the actual programmer.

Right! More times than not, I do talk to the programmer. And I have been in a situation more than once, where I've talked to the programmer and gotten an upgrade to solve a particular problem. With ASDG on *Carmen Sandiego*, we got the new 8505 Exabyte and they upgraded their software for us. They downloaded it to me directly and I was using it an hour later. I can't imagine that in the IBM world.

Can you summarize your feelings on the Amiga?

The thing about the Amiga which is most important to me is the programs I've chosen to use, which have made it so easy for me to express my creativity. Because of the way the programs are written, because of the user-friendliness of the Amiga, because the Amiga multitasks, I can eliminate the technique and work right on the creative process, putting it together. If I have an idea, I can get right to it, and I won't lose that idea.

Because of the depth of the programs, like ADPro and DeluxePaint, I can solve problems. If I want to do something, I can figure out how to do it with these programs. I probably could do it with other programs, but I grew up with ADPro and DeluxePaint, and now the VideoToaster. Because it's not that easy for me to learn a program, I struggle... But once I learn one, I stick with it. ■

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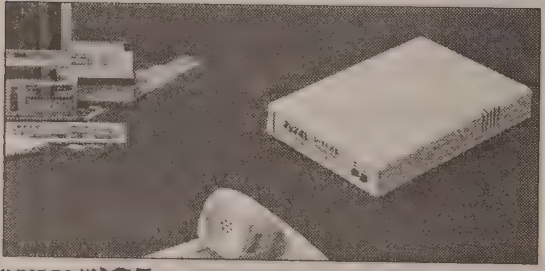

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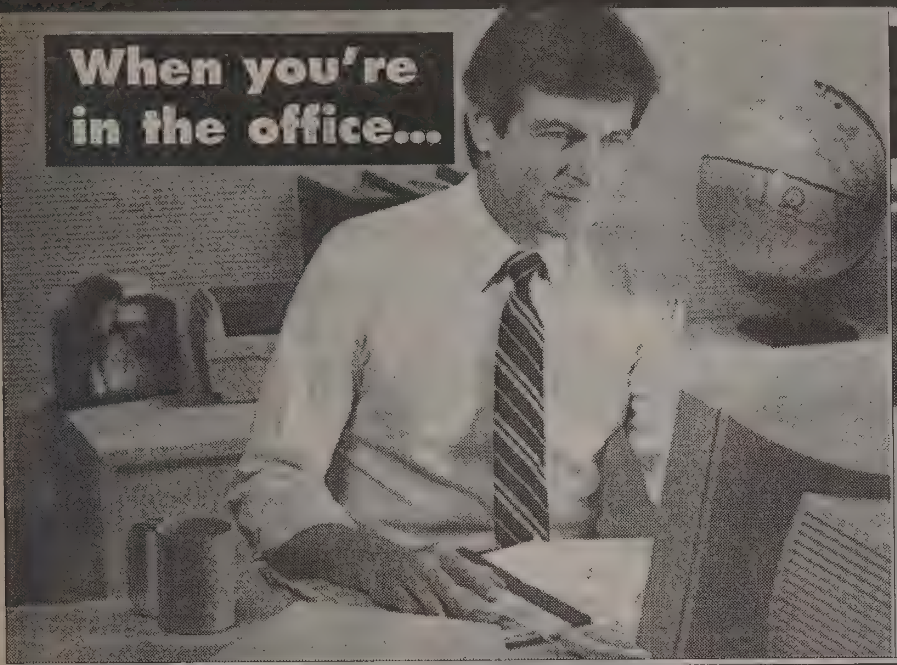
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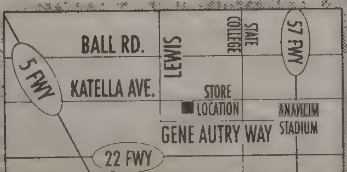

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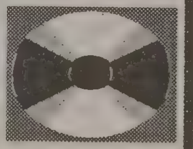

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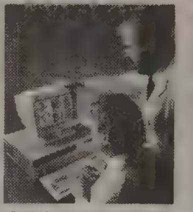

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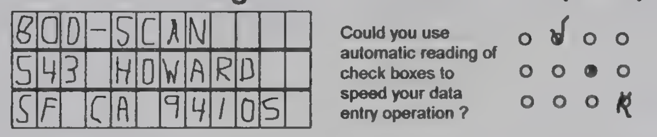
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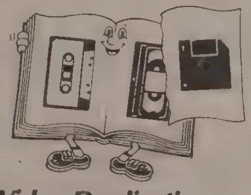

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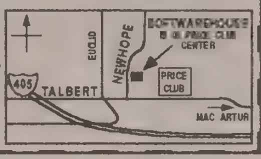

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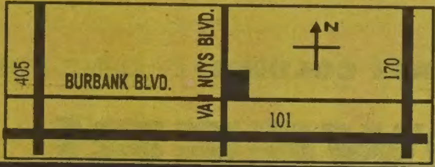

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The following *is an excerpt of John C. Dvorak's new musical comedy,* DWEEB!, *which will begin auditions for a San Francisco appearance before continuing to Broadway next spring. It's about Nathan Gottlieb, boy genius. Nathan is derided as a dweeb by what few friends he has. Nobody likes him until the end when Nathan saves the town of Mallet, PA, from destruction. In this scene, Nathan, sixteen, laments his choices in life with his cheerleader girlfriend.*

Let's face it. Guys like Bill Gates have taken all the money and hoarded it. There's only so much money and some guys have too much.

Nathan: [*sitting at table reading the want ads*] Gosh, Mandy, what am I going to do this summer. I need a job.

Mandy: [*sitting on floor playing jacks*] Oh Nathan, why do you want to work at all? You're a really, really good genius. Shouldn't you be just sitting and thinking of stuff? I mean, like, can't your parents give you money?

Nathan: [*putting paper down*] No! I want to make something of my life. I want to be like Bill Gates, you know. He's the best guy in the world. I mean he's rich and doesn't even care!

Mandy: Who?

Nathan: Bill Gates the ba-jillionaire? Did you know he wanted to change his name from Bill to Billion? That's how rich he is. He can change his name. Boy, I wish I could change my name. Nathan. My name sucks. I'll never get rich with a name like that. Maybe I should just call Wendy's and see if they're hiring. I should drop out of school and hope to make manager someday at Wendy's.

Mandy: Nancy worked at Wendy's last summer. She didn't like it.

Nathan: Let's face it. Guys like Bill Gates have taken all the money and hoarded it. There's only so much money and some guys have too much. Something should be done. I think it's time for a redistribution of wealth. We need a bloody revolution in this country to set things straight.

Mandy: Actually it was Kimberly who worked at Wendy's. That's right, Kimber. She hated it.

Nathan: Mandy, are you listening to anything I'm saying?

Mandy: Of course. Bill Gates is a guy with money and you want to revolt. Count me out. I'm decidedly nonviolent. Too messy. And why all this talk about Wendy's? Why aren't you programming your computer? You're supposed to be this computer wizard. Why aren't you programming or whatever it is you do to the thing. I'm only going steady with you because you're the smartest guy in school. Show yourself off more. Your brains, I mean.

Nathan: You know, I've been meaning to ask you. Why is the cutest cheerleader in school going out with a guy...uh, uh....a...

Mandy: A dweeb?

Nathan: Yes, a dweeb. A dweeb like me! All the other girls are going with the football players. Except you. You're the homecoming queen and voted most likely to succeed.

Mandy: And most likely to marry a rich man. You're the only one in this school with potential, Nathan. I mean, once you inherit the family fortune we can cruise the world. I'll dress you right, so don't worry.

Nathan: The family fortune? What gave you the impression that I'll inherit the family fortune. What family fortune?

Mandy: What do you mean? Isn't that what you do on the computer, work on the family fortune?

Nathan: What family fortune?

JUST THEN THE PHONE RINGS—Mandy answers it.

Mandy: Can I say who's calling? OK. Nathan, it's for you. Some guy named Bill Gates.

Nathan: Wow! [*grabs phone*] Hullo...M-M-M-Mister Gates. Thanks for calling. Did you see the program I sent?

Gates [*on phone*]: Yes, I did. It's an amazing piece of work. We'd like to incorporate it in our updated release of Chicago. We think it will be critical to the success of the upgrade.

Nathan: Updated Chicago? What is that? I thought Chicago was delayed.

Gates [*on phone*]: Yes, well, we're working on the update to the unreleased version. We love to think ahead. I'll pay you $50 for the utility.

Nathan: What?

Gates [*on phone*]: I mean $50,000. Did I say $50? I meant $50,000.

Nathan: I thought it was critical. Isn't $50,000 a little low?

Gates [*on phone*]: Why you pipsqueak, who do you think you're talking too? You're a sixteen-year-old numnuts. I'll give you $250,000 and that's my last offer.

Nathan: Well, I...be—

Gates [*on phone*]: IBM? IBM what? Are they aware of this? Those bastards. I'll sink them. OS/2 is dead! Dead I tell you! Shout it from the mountains. OS/2 is D-E-A-D! Nobody, I mean nobody beats Bill Gates! I'll give you five million for the product and a job in the company. Stock too!

Nathan: Well...

Gates [*on phone*]: What is it that you want? More?

Nathan: A ride in the Porsche! Plus the five mil, of course.

Gates [*on phone*]: Deal! You'll have a check in the morning. Report to work on Monday 4 am sharp. [*CLICK!*]

Nathan: Cool. [*turning to Mandy*] So what were we talking about?

Mandy: Your family fortune!

Nathan: What family fortune?

Mandy: The hot dog company, silly.

Nathan: What hot dog company?

Mandy: Nathan's.

Nathan: We don't own Nathan's!

Mandy: You creep. [*slaps him*] Stringing me along! I'm outta here. Loser! Dweeb!

She stomps out.

Nathan [*to himself*]: Cool. Bill Gates actually called *me*!

Scene finishes with Nathan breaking into the song "BILL!" end of scene 10. ■

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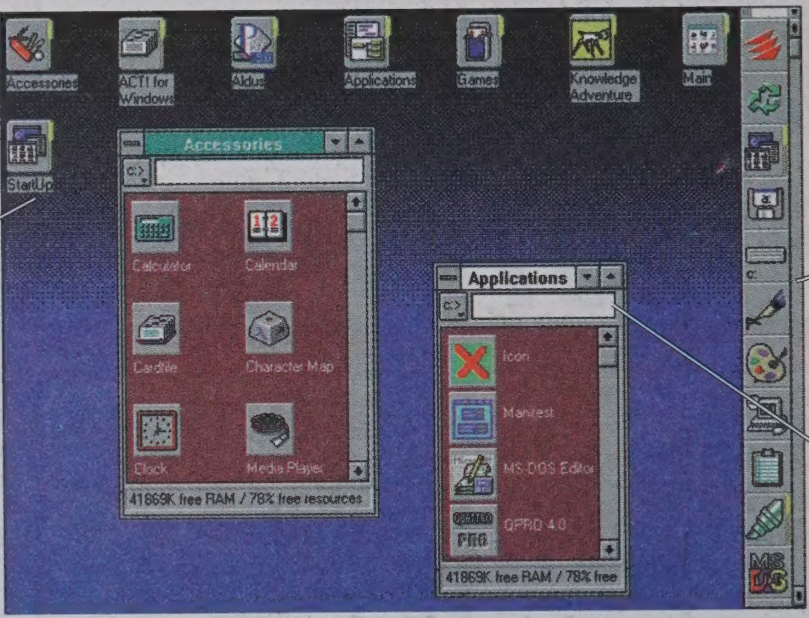
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